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ORIGINAL ARTICLES.

THE USE OF THE X-RAYS IN THE TREATMENT OF DISEASES OF THE SKIN, CERTAIN FORMS OF CANCER, OF THE GLANDULAR SYSTEM AND OF OTHER DISEASES, AND AS A MEANS OF RELIEVING PAIN.*

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THE usefulness of the X-rays in medical and surgical diagnosis has now been before the profession for over seven years, and their value in this direction is more or less appreciated, their aid in surgical diagnosis being more generally recognized than their assistance in medical diagnosis. The use of the X-rays as a therapeutic agent however, has been brought to the general attention of the profession more recently, and their range in this field is so wide that it has seemed to me the members of this association would be interested in a brief outline of what they have accomplished. In the third edition of my book, "The Roentgen Rays in Medicine and Surgery," I have considered this subject at length and have shown how the method may be carried out and the precautions which should be taken, so that here I will confine myself more especially to some of the results of their use in diseases of the skin, in those of the glandular system, as an analgesic, and in the treatment of new growths.

Diseases of the Skin.—The first disease in which their use attracted much attention was that of lupus vulgaris. Obstinate cases of long standing were found to yield to this agent, the resulting scars were more like the normal skin than those following the use of the older methods, and parts formerly inaccessible could be reached, but experience has shown that the treatment needs to be continued over a long period if the disease is extensive and deep seated. Moreover, too short a time has elapsed to demonstrate how complete and permanent recoveries will be. Recurrences have taken place, but in these cases treatment by the X-rays can be again instituted.

The value of the X-rays in the treatment of eczema, the most common of all the diseases of the skin, deserves special mention. All varieties of this disease yield, as a rule to the X-rays, some of them readily, and all without causing the patient any inconvenience, and, so far as my experience goes, if the disease returns it is apt to appear in some part that has not been treated by the X-rays. In addition to the relief from distressing symptoms obtained from the use of this method, the patient is likewise relieved from the annoyance of frequent application of washes or ointments; further, in some parts of the body these ointments cannot be applied in a satisfactory manner, whereas the X-rays reach such portions readily.

Psoriasis, though less common than eczema, has yielded even less readily to treatment by the means heretofore at our disposal, but it responds very readily to this new agent, and although the results are not in all cases permanent, recurrences yield to the rays, and I believe that with more experience recurrences will be less apt to follow than at present.

Various forms of acne are also amenable to the X-rays, and their use in this disease, which may disfigure the face, for instance, very much, can convert a repulsive complexion into one of more than average comeliness.

My experience in treating herpes zoster by means of the X-rays has been limited to two cases, but the immediate relief from the burning sensation and pain that followed their application deserves to be noted.

They are likewise useful for treating sycosis, sycosis non parasitica, favus, lupus erythematosus, nevus flammeus, etc., but the time at my disposal is too limited to consider all the diseases of the skin in which the X-rays are of value, yet I think the instances mentioned serve to indicate that we have in them a therapeutic agent which is capable of giving relief in a larger number of these diseases than any other single remedy and to a larger number of patients when we consider the success with which it is used in eczema, for example, a disease which is so common.

Hodgkin's Disease. Tuberculous Adenitis and Peritonitis. Tuberculosis of Lung and Bones.—Now let us consider the therapeutic use of the X-rays in diseases of a different character, beginning with Hodgkin's disease, for which we have had no remedy. The X-rays offer the hope that we have in them a means of prolonging the life of the patient, and perhaps of curing some cases. In those in which I have used the X-rays improvement in the patient's well-being and in the glands has been striking; in one case this improvement was subsequently followed by death; in another case the patient went away on a journey and I have not since heard from him; the other cases are now under treatment and are all improving. Good results have also been reported by other physicians; time will show what the final estimate of the X-rays as a remedy in this disease will be, but they certainly should be used, although cautiously, and treatment be suspended, should untoward symptoms arise.

Most satisfactory results have followed the use of the X-rays in tuberculous adenitis; the so-

* Presented at the meeting of the Association of American Physicians, Washington, May, 1903.

called "scrofulous" glands, especially those in the neck, yield surprisingly well and often quite readily to the action of this new therapeutic agent; the same is true of tuberculous sinuses.

The treatment of tuberculosis of the lung by the X-rays is still in the experimental stage; good results have been reported as following their use by several observers, but from my own experience I am not as yet ready to offer an opinion.

Favorable results have been reported in the use of the X-rays in chronic tuberculous peritonitis.

Tuberculosis of the bone will be the least likely form to yield to the X-rays, as the calcium salts offer more obstacle to their passage than do the other constituents of the body, but in tuberculous bone the light penetrates more readily, because of its diseased condition, than through healthy bone, and this fact is an advantage in carrying out such treatment.

In the use of the X-rays, I have noticed that patients not infrequently reported to me an improvement in their general well-being, aside from the relief obtained from the betterment of the disease from which they were suffering. These reports have come to me independently from so many different patients that I think it cannot be an effect of the imagination, but that the X-rays have an action which may be the result of stimulation of the circulation, or perhaps some action on the nervous system, which might be classed under the group which we designate as tonics. It is possible that this action might be helpful in some forms of cardiac disease.

New Growths.—The use of the X-rays in the treatment of new growths is of special importance. A table of 150 of my patients treated by this method is given in the appendix of the third edition of my book, to which allusion has already been made. In these cases the use of the X-rays was instituted prior to 1903, and the earliest of

Fig. 1.* Case 148, G. P., fifty-one years of age. Microscopical and clinical diagnosis, rodent ulcer of nose. Duration eight years. Before treatment by the X-rays.

Diseases of the Eye.—In treating diseases of the eye the X-rays have been used directly upon the cornea and also upon the conjunctiva. Some forms of severe conjunctivitis, of long standing and difficult to heal by ordinary methods of treatment, have yielded to the X-rays.

X-rays as Analgesic and Tonic.—The X-rays have been found to relieve pain accompanying so many different diseases that it seems to me they are entitled to be classed among the group of analgesics, and I would again direct the attention of physiologists and pharmacologists to the study of this wonderful action of the X-rays upon the sensory nerves. We find for example, that hepatic colic and certain forms of neuralgia and of pain accompanying cancer are relieved by the X-rays; and that painful affections, for example one involving the ends of the fingers, making them so sensitive that the patient could not put on gloves or use the hands with any comfort, are likewise relieved. In this case the cause of the trouble was unknown.

them have been well for more than three years. My experience teaches me that in the smaller forms of new growths, and in recurrences after operation, for example, after the removal of breasts, the X-rays may be of great service. Much depends upon the size, character and site of the growth, and whether or not the glands are involved; in the latter case the X-rays seem as a rule to be of less avail. Some of the smaller new growths heal after eight or ten exposures—I have known them to disappear after two exposures—but, as a rule, the number is greater, twenty perhaps are needed, and in some cases a far larger number. In the latter cases greater patience is necessary in order to obtain all the help that the X-rays, if their treatment is persisted in, are able to give; further, the expense is great in cases that require a large number of exposures extending over some months, and

*Figs. 1 to 6 taken from the third edition of "The Roentgen Rays in Medicine and Surgery" by permission of The Macmillan Company.

therefore the method in such instances is only within the reach of the wealthy or the very poor.

Fig. 2.* Case 148, G. P. After twenty-two exposures. Healing complete three days later.

For the present, at least, people of moderate means would not be able to afford the use of the X-rays, outside a hospital, if their cases demand prolonged treatment. In some instances, of course, the treatment is not so expensive as an operation, in others no more so. It is not difficult for a practitioner who has had experience to discriminate between those cases which will yield readily and those that require prolonged treatment.

Fig. 3.* Case 59, Mrs. S. Clinical diagnosis, epithelioma of cheek. Photograph taken after two exposures of ten minutes each to the X-rays.

The following cuts illustrate the beneficent effects of the X-rays:

It is too early to state in this class of diseases, as in the others already mentioned, how permanent these good results will be, but recurrences usually yield to further treatment by the X-rays.

One of the most instructive experiences that I have had in the study of the use of the X-rays in the treatment of new growths has resulted from a group of cases which is illustrated by the following in which I was able to compare the respective merits of the use of the X-rays and of operation. In this case an operation was done to remove a cancerous growth; three months later there was a recurrence, and a second operation was done; in less than three months a second recurrence took place; the X-rays were then resorted to. Fifteen months have elapsed since the recovery took place following their use, and the patient is still well.

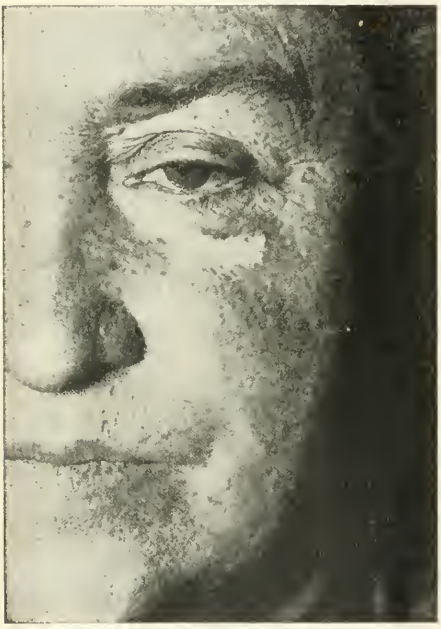

FIG. 4.* Case 59, Mrs. S. After treatment by the X-rays.

The breast cases form a special class by themselves. In those which are beyond the reach of operation relief from pain may usually be had by the use of the X-rays, and the progress of the growth may be delayed. In other forms, where the growth has not gone so far, the X-rays, if used patiently and persistently, may accomplish surprising results, not in all cases, but certainly in a sufficient number to justify their employment where operation is declined. In cases where operation is considered it seems to me quite possible that by using the X-rays persistently and cautiously during several months, the progress of some new growths in the breast might be checked, and it is not improbable that in certain of these cases the results obtained from the use of the X-rays would be as good as those which follow operation; that is to say, although the X-rays may not enable us to get rid wholly of the growth, they may give the patient as many years of life, or perhaps more than would, on the average, follow the removal of the breast by operation. I am not ready to recommend the substitution of the X-rays for operation in these cases, but refer to this course as one which further experience may establish as wise in certain instances. It would be necessary to carry out this treatment for a long period of time, and the plan would not be devoid of risks unless the practitioner were experienced and careful in the use of the X-rays.

In the treatment of new growths too vigorous use of the X-rays must be avoided, in order not to stimulate the disease and so cause it to spread instead of to heal or in the larger forms of new growths to avoid setting up a toxemia that may be disastrous to the patient.

It is evident that the X-rays promise to afford the best method of treatment for superficial new growths and that experience is needed, when the growths are large or deep-seated, to select the cases for which this treatment is most suitable and that the greatest care must be exercised in order not only to avoid injurious but to obtain good results; further that the apparatus must be good and well under the control of the practitioner.

X-ray Injuries.—There are certain dangers connected with the use of the X-rays. If the skin is over exposed, severe inflammation or even ulceration will follow, and these so-called "X-ray burns" are sometimes very difficult to heal; another danger in their use, that may occur in cases of new growths and Hodgkin's disease, has been alluded to above, the treatment may be pushed too rapidly and a serious toxemia result; experience and care can obviate these risks.

A word as to the limit of action, as regards the site of the disease, of this new therapeutic agent. The parts most easily affected are, of course, those near the surface, but a powerful apparatus can accomplish results that are beyond the reach of a smaller one. One of my patients, the site of whose disease is the interior of the chest, lost steadily in strength, color and weight when treated with an apparatus of ordinary power, but improved after one or two exposures when treated by means of a powerful apparatus.

There are, then, two points to be kept constantly in mind when pursuing the study and use of the X-rays for the treatment of deeper seated portions of the body. First, the treatment must be carried on cautiously, and in many cases persistently, for a considerable period, and results looked for in some cases only after a long inter-

val; in some cases the treatment should be interrupted from time to time and the desired results watched for during these pauses, for the good effects of the treatment may in some instances be first observed a considerable length of time after the exposures have ceased for the time being, for instance, none may be apparent after a series of exposures given three times a week for a period of six months and then become evident some weeks after the discontinuance of the treatment. Second, the patient should in all ways be under careful observation, not only as regards the action of the X-rays on the skin, but also as regards symptoms that are the outcome of chemical changes and indicate toxemia, for example, and also by means of the methods used to ascertain what chemical changes, if any, have taken place in the urine or the blood. In a word, careful methods should be used in carrying out and controlling the amount of the treatment, and they should be employed by practitioners who have had the best training.

The action of these rays can hardly be accounted for on the ground that they kill micro-organisms; neither is it likely that all the diseases relieved by the X-rays are due to the latter; moreover, so far as experiments thus far have gone, the X-rays are not directly a good germicide. It seems more probable that these rays bring about some chemical changes which assist nature to cause healing and interfere with the development of some micro-organisms.

One chemical action of the X-rays is shown by the effect they produce on a photographic plate. I have observed also another effect, which undoubtedly, I think, is the result of chemical change. In my tube holder I have used plates of glass 1 to 1½ cm. thick, to cover the openings in its sides, and I have noticed that where the X-rays passed through the glass the surface became of a brownish color, but where they were prevented from reaching the glass, because of the coats of white lead with which the inside of the tubeholder was painted, no change took place in the color of the glass. The discoloration of these thick plates of glass was limited at first to parts near the surface, but after longer exposure to the X-rays it extended through the entire thickness of the glass, as could easily be seen by holding the plates up to the light and looking through

Fig. 5.* Case 78, A. D., twelve years of age. Microscopical diagnosis, lymphosarcoma after first operation and round-celled sarcoma after second operation. Duration, seven years. Before treatment by the X-rays.

them edgewise. Similar changes are seen in the glass of which the vacuum tubes are made; the glass in some instances becoming of a purple color on the side through which the X-rays have passed. It is noteworthy that the color varies with the composition of the glass.

It is evident that we have in these rays a means of bringing about chemical reactions, and I believe that their therapeutic uses depend upon this property and that by it they assist nature.

One of the most remarkable properties of the X-rays is their power to pass through healthy tissues without injury to them and bring about healing in the unsound tissues beyond them. This fact indicates the vista of possibilities that is open to the X-rays as a healing agent. We have in them a form of radiation which, within certain limits of exposure, is selective and assists the chemical processes of nature to overcome pathological processes. It is not surprising, therefore, that the list of diseases or derangements that can be helped by the X-rays is a long and constantly growing one. They have opened to us new methods in diagnosis and a method for the treatment of diseases, more comprehensive than any other remedy we have hitherto possessed. They may also eventually prove to be a key which will assist us in studying some of the problems in the chemistry of physiological and of pathological processes.

Fig. 6.—Case 78, A. D., twelve years of age. After treatment by the X-rays. Still under treatment.

TREATMENT OF MIGRAINE.

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Migraine is an autointoxication which commonly finds expression in recurrent, self-limited attacks of paroxysmal headache, usually accompanied by nausea, vomiting, vertigo, visual phenomena, and other vasomotor and sensory disturbances.

In the treatment of migraine I assume the following hypotheses:

1. While autointoxication is the essential factor in every case it should also be noted that a neurotic inheritance, overtaxation of the nervous

system, and reflex irritation may be contributing etiological factors in any individual case.

2. The poisons which produce migraine are under normal conditions largely destroyed or converted into harmless products by the liver. These poisons are, therefore, increased by all conditions that diminish the functional capacity of the liver, such as indoor life and lack of exercise, and by all conditions that throw increased work upon the liver, such as excessive eating and alcohol drinking.

3. Under pathological conditions, either through a weakened functional capacity of the liver or through excess of poisons produced, the liver is no longer able to destroy these poisons, and a periodic acute functional incompetency of this organ results, thereby throwing these poisons into the general circulation and producing an acute autointoxication (migraine).

4. Under aggravated pathological conditions the liver may remain for a long time in a state of chronic incompetency, thus allowing the greater portion of these poisons to filter through into the general circulation, producing a state of chronic autointoxication (chronic migraine with neurasthenic symptoms). In this condition the liver is commonly enlarged.

5. A faulty metabolism of albuminoids, occurring both in the body tissues and in the intestinal canal, plays a rôle in the etiology of migraine.

6. Migraine is commonly associated with constipation and resulting abnormal intestinal fermentation.

7. The poisons which produce migraine commonly act through both the sensory and sympathetic nerves of a part, producing both pain and vasomotor disturbances. The younger the patient the more marked are the vasomotor disturbances, and the less marked are the sensory, and vice versa. This is a rule which may have exceptions. Very commonly the poisons may at the same time attack the sensory nerves of one part, producing pain (headache), and the sympathetic nerves of another part, producing vasomotor disturbances (vomiting).

8. The symptoms of a migrainous attack will vary with the part attacked, the nerves involved, the virulence and character of the poisons, and the age and physical condition of the patient.

9. The ordinary type of migraine, which is manifested by recurrent self-limited attacks of unilateral headache associated with nausea, vomiting, vertigo, and visual disturbances, may have many variations as to symptoms and yet be migrainous, in the sense that the attacks have the same etiology and yield to the same treatment.

Among such variations may be classed periodic depression of spirits, periodic tachycardia, recurring attacks of dyspepsia without apparent cause, recurrent attacks of severe gastric pain and vomiting not associated with headache, and in younger patients recurrent vomiting and recurrent coryza not associated with pain in the stomach or head.

About puberty, in rare instances, the migrainous attacks may become epileptoid in character.

TREATMENT.

The purpose of this paper is to outline a treatment of migraine which I have employed with good success during the last ten years.

Medical Treatment for Relief of Constitutional Condition.—Since migraine is a chronic disease and treatment must be continued over many months, it is absolutely necessary, for permanent success in the treatment of this condition, that the medical treatment should be as simple and as palatable as possible. This is true of men, women, and children alike. The busy man cannot, as a rule, be prevailed upon to take over a long period of time three or four doses of medicine each day, and women and children, as a rule, after a few weeks of treatment, prefer the disease to taking of dose after dose of unpalatable medicine throughout an entire season. The keynote of success, therefore, in the treatment of migraine is in the simplicity and palatability of effective medication. To accomplish these desiderata some ten years ago I devised a formula which is here presented with such slight changes as time and experience have suggested:

℞.—Sodii sulphatis (dry)	30 grains.
Sodii salicylatis (from wintergreen) .	10 grains.
Magnesii sulphatis	50 grains.
Lithii benzoatis	5 grains.
Tincture nucis vomicæ . . .	3 drops.
Aquæ destil. to make	4 ounces.

M.

This prescription is made in a large quantity by a reliable pharmacist and then sent by him to a mineral-water factory to be put up in siphons and charged with carbonic acid. These siphons are sold on prescription at fifty or sixty cents each, with a good margin of profit to the pharmacist.

These siphons I prescribe under the name of "Siphon C," and direct my adult patients to take from one-quarter to one-half glass of this carbonated medicine each morning on arising, half an hour or more before breakfast. It is important that the dose should be so regulated as to produce a slightly laxative but not cathartic action. Only one dose of this medicine is given in twenty-four hours, and after the patient is fairly under treatment this is commonly the only medicine used.

I know from a very long experience that the above prescription may be given for an indefinite length of time (years, if necessary) without losing its great therapeutic value or producing disgust for it on the part of the patient. I have yet to find an adult patient who would not continue the taking of this medicine as long as I desired. After the first week or ten days patients grow accustomed to it, and then even the most sensitive women no longer object to its use. This medicine, moreover, is not contraindicated by any condition of the stomach. It is, in fact, one of the most valuable formulas I have found for the

treatment of chronic gastric catarrh and chronic ulcer of the stomach. The condition of the stomach need not deter us, therefore, from prescribing this formula. On the other hand, "a bad stomach" is a further indication for its extended use.

I do not hesitate to say that the action of the above siphon medicine, when combined with proper dietetic and hygienic treatment in the relief of migrainous symptoms, furnishes one of the most satisfactory examples of the action of drugs in the relief of symptoms that can be found in the whole range of materia medica proper.

I wish especially to insist that the use of the above formula will give better results than the separate use of the various medicines which it contains. The great value of the formula, however, depends upon the fact that it combines palatability and simplicity with efficacy of medication; and these advantages enable one to treat an essentially chronic condition by giving a single dose of medicine in a day.

It is my habit in the treatment of this condition to continue the above siphon medicine through the winter months only, discontinuing its use about April or May.

Patients under this treatment often go through the winter months without a single attack of migraine. On discontinuing the medicine, however, in April or May, when the climatic conditions make it no longer necessary, I usually advise my patients to report to me again about the first of the following January, or earlier, of course, if there is any return of the migrainous symptoms. At this time they are again placed upon the syphon medicine, and advised to continue it until the following spring. By this plan of giving the above formula for three or four months in the year I have succeeded in controlling migrainous symptoms in a large number of my patients.

In studying the ingredients of this formula one finds the medicines that have been used for many years in the treatment of this condition. Magnesium sulphate is necessary to overcome the constipation which is present in nearly all of the cases, and by its action we unload the portal circulation and eliminate the poisons through the intestinal canal.

Sodium sulphate acts very much in the same manner, plus the cholagogue action. Lithium benzoate probably also acts an an intestinal antiseptic, and probably as an eliminator through the kidneys. The small amount of nux vomica which the formula contains is added largely to cover the soapy taste of the formula, and thereby make it more palatable. Sodium salicylate (wintergreen) is the remedy par excellence of the prescription. This remedy not only acts as an intestinal antiseptic, but increases the functional activity of the liver.

There are two other siphon formulæ which I occasionally use in the treatment of migraine. They are as follows:

Siphon B.—

℞.—Sodii sulphatis (granulated) . .	2 drams.
Sodii phosphatis (granulated) .	1 dram
Sodii salicylatis	10 grains.
Tincturæ nucis vomicæ . . .	3 minims.
Aquæ destil. to make . . .	4 ounces.

M.
S.—Take each morning.

Siphon A.—

℞.—Potass. bicarbonatis	20 grains.
Rochelle salts	1 dram.
Sodii salicylatis	5 grains.
Tincturæ gentian comp. . .	½ ounce.
Aquæ destil. to make . . .	4 ounces.

M.
S.—Take each morning.

Siphons B and A may be used in those cases in which Siphon C is too laxative in its action. Siphon A is especially valuable in those cases of migraine suffering from irritable bladder or muscular rheumatism.

In the beginning of the treatment, however, in addition to the siphon medication, I always prescribe one of three drugs—sodium benzoate, sodium salicylate, or cannabis indicæ—and I further advise the drinking of water between meals.

Sodium benzoate may be prescribed in 20-grain doses taken after lunch and dinner. This dose may be more palatable by taking it in peppermint water or in some carbonated water.

Sodium salicylate (wintergreen) may be given in capsules in three to five-grain doses after lunch and after dinner.

The proprietary preparation known as colchi-sal may be given in the same manner, one capsule after meals. I have found it to be a most valuable aid in the treatment of long-standing cases associated with other gouty symptoms.

Salol may be the form of the salicylate chosen for the treatment of this condition in children. I have also used salicin very largely in the treatment of these cases, but, I think, with not such good results as I have obtained from the above-named remedies.

Cannabis indica, in one-quarter grain doses two or three times a day, is of very great value in controlling the paroxysms of migraine, and may be used for three or four weeks, until the patient is well under the siphon treatment. I not infrequently combine the cannabis indica in a capsule with sodium salicylate or salol in the treatment of these cases.

With these drugs to aid the action of the siphon medicine, the paroxysms of migraine may be controlled almost from the beginning of the treatment. After the patient, however, has been under treatment for from three to six weeks all medication other than the siphon medicine may be discontinued.

In some of the cases, however, it is necessary to give an intestinal antiseptic throughout the treatment of the case, and for this purpose I commonly use a one-grain salol-coated pill of potassium permanganate, taken after meals. This pill, which I devised many years ago and

have used continuously ever since, has proven very efficacious in my hands. Dr. M. Allen Starr has modified this pill under the following formula:

℞.—Sodium sulphocarbal . . . 5 grains.
Kal. permangan. . . . . 1 grain.
Betanaphthol . . . . . 1 grain.
M.
S.—One after meals and at night.

This pill is coated with shellac and is of value in those cases requiring an intestinal antiseptic.

In 1895* I published a paper upon this same subject in which I recommended the use of the following formula:

℞.—Sodii salicylatis (wintergreen) . 2 drams.
Sodii phosphatis (dry) . . . 4 drams.
Sodii sulphatis (dry) . . . 10 drams.
S.—A teaspoonful, more or less, to be taken in a glass of seltzer water each morning.

These salts I still prescribe for patients traveling or otherwise so situated as to make it impossible for them to get the siphon medicine.

There is one other drug that has long held a deservingly high reputation in the treatment of migraine, and that is mercury, either in the form of calomel, blue mass, or the gray powder. Either calomel or blue mass is a good drug to begin the treatment of a case of migraine, and even after the patient has been placed upon the siphon medicine it may occasionally be beneficial to supplement this treatment with a few doses of calomel or a dose of blue mass.

The gray powder of mercury I have used with great advantage in the treatment of migrainous conditions in children† too young to take the siphon treatment. In such patients a laxative formula, such as the following, may be substituted for the siphon medicine:

℞.—Sodii sulphatis . . . . 2½ drams.
Magnesium sulphatis . . . 5 drams.
Lithii benzoatis . . . . 2 drams.
Aquæ destil. to make . . . 3 ounces.
Elixir tarax . . . . . 3 ounces.
M.
S.—Tablespoonful before breakfast for a child eight years.

In the treatment of migrainous cases I have occasionally noticed that after a prolonged use of the siphon treatment patients become slightly nauseated, the tongue becomes furred, and there is a dull headache with loss of appetite. In this condition dilute nitromuriatic acid acts almost as a specific, but during the time that the acid is given compound licorice powder or cascara sagrada may be substituted for the siphon medicine. After a week of such treatment the siphon medicine may be resumed.

Treatment of Attack.—The migrainous attack is best treated by rest in bed in a dark room without food. This with hot fomentations to the forehead and a dose of calomel or blue mass will suffice to relieve milder attacks. When the attacks are more severe, however, the following prescription, if taken early in the attack, will usually give relief:

℞.—Citrate of caffeine . . . . 2 grains.
Antipyrin . . . . . 10 grams.
Bromide of potash . . . . 30 grains.
M.
S.—To be taken in half a glass of water.

If for any reason it is not desirable to give antipyrin in these attacks, ten grains of sodium salicylate may be substituted for the antipyrin in the above prescription. Either of these prescriptions will be found very efficacious in relieving the severe pain of migrainous attacks. Occasionally, however, the attack may be so severe as to demand the use of morphine hypodermically. Following the attack the routine treatment as above outlined may be resumed, and when the patient is well under this treatment the paroxysmal attacks, as a rule, cease.

Preliminary Treatment.—In the beginning of the treatment of a case of migraine it is important to search for reflex factors that may possibly play a rôle in producing the paroxysms. Such reflex factors are often found in ocular defects producing eye-strain, in abnormal conditions of the nose and pharynx, such as adenoids and hypertrophies, and in diseases of the pelvic organs.

It is not an uncommon experience to have migrainous attacks almost disappear on the removal of some aggravated pathological condition which is causing reflex irritation of the nerve centers. This does not, however, prove that the reflex is the sole factor in producing the migraine in these cases. It does, however, prove that these factors are so important that it would be folly to attempt the constitutional treatment of such cases without the removal of reflex factors. I do not believe, however, that simple reflex headaches which are entirely cured by the removal of a reflex cause are to be classed under the heading of migraine.

Migraine is, as I believe, a constitutional disease, due to an autointoxication, and with this condition there may coexist a cause of reflex irritation to the nervous system so important that it is impossible to completely cure these cases without the removal of the reflex factor.

Dietetic and Hygienic Treatment.—All that has been said in the way of medicinal treatment will be of little avail unless it goes hand in hand with proper dietetic and hygienic treatment. The most important bit of dietetic advice that can be given to a migrainous patient is that he should not eat too much. Most of these patients are in the habit of eating more than is necessary. It is important, therefore, that any tendency in this direction should be restrained. There are also certain articles of diet which should be partaken of sparingly or not at all—coffee, alcohol, red meats, and sweets should, for a time at least, be almost if not quite eliminated from the diet.

Patients may be allowed milk, eggs, fish, oysters, the white meat of poultry, cereals, fruits, and well-prepared vegetables, provided a feeble

* Medical News, September 7, 1895.
† In 1897 I published in the Archives of Pediatrics a series of papers on the treatment of this condition in infants and children.

digestion or some idiosyncrasy on the part of the individual does not exclude one or more of the above articles from his diet list. The diet to be prescribed in any individual case will, of course, depend upon the age of the patient as well as upon his digestive capacity and the character of life he leads.

Exercise in the open air is scarcely less important than diet in the treatment of migrainous cases. All kinds of outdoor athletic sports are to be advised, and among these horseback riding is one of the best. The financial condition, the age, and the inclinations of the individual patient will suggest to the physician the character of outdoor exercise to be recommended. General massage is of great value in the early treatment of patients of feeble constitution.

Before closing the subject of the treatment of migraine, I would call attention to the great value of certain hydropathic measures in the treatment of selected cases. The Turkish and vapor baths as well as hot alkaline tub baths are of benefit, especially in patients of rather stout and robust constitutions. These baths are more efficacious when accompanied by large potations of water and followed by general massage.

PAROXYSMAL HEMATINURIA (HEMOGLOBINURIE A FRIGORE).*

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THE rarity and obscure nature of paroxysmal or intermittent hematinuria make the detailed report of the two following cases of interest.

Case I.—The patient is a lad of twenty years, of German parentage. He belongs to a neurotic family, his father being a very nervous man, and and his mother indulging in hysterical paroxysms of anger in which she is said to lie on the floor in violent jactitation, even frothing at the mouth and becoming unconscious. The patient in infancy was marasmic, but in childhood was in fair health up to his fourth year, when the first paroxysm of hemoglobinuria was observed, which has been followed by similar attacks during the past sixteen years. This first attack began during a sleighride in which the boy's feet became chilled. Subsequent attacks have occurred, chiefly from September to May, on chilly days, but a few have arisen in midsummer from emotional causes. The patient's father stated to me that "the boy frequently goes outdoors on a very cold day without experiencing an attack, but any sudden fall of temperature will bring one on, and a raw wind has the same effect. Dry cold air is less apt to precipitate an attack than moist air. The attacks are never experienced upon even the coldest winter days provided the patient remains indoors. The paroxysms are so typical that a short description of one will serve not only for this case but for others which have been reported. After a brief exposure to moderate cold the hands and feet become stiff, numb, swollen and cyanosed; there is a general sensation of chilliness but a decided rigor is rare; there is an intense sensation of weariness, with yawning, severe headache, and abdominal cramps. Soon the face itches and burns, and large urticarial wheals appear upon the forehead, cheeks and hands. The temperature rises two or three degrees, excessive thirst is experienced, and lumbar pain is complained of, chiefly over the region of the left kidney. Micturition becomes frequent, being desired every 10 or 15 minutes, but it is unaccompanied by pain or strangury. The first urine voided in the attack is of a dark red or port wine color, and in all about a pint of blood-stained urine is passed during the entire attack, which lasts about an hour, provided the patient can go promptly to bed and warm himself. The patient exceptionally has had two such attacks on the same day; at other times he has had one attack daily for a week or more, and again he has passed a month in winter without a paroxysm. He complains of feeling weak and prostrated most of the time and of being unable to apply himself to any work, mental or physical. He has tried to work as a telephone boy.

The patient was under observation in the Presbyterian Hospital four years ago in January, part of the time in the service of Dr. Andrew H. Smith; he was again treated at that institution after a short interval, and he applied for treatment at the eye clinic of the Cornell Medical College Dispensary Aug. 20, 1901, where he was found by Dr. Robert G. Reese to have a double interstitial keratitis. During the past winter his case has been studied at my clinic in this dispensary. He has, therefore, been under definite medical observation for more than four years. I have seen the patient in several typical attacks such as that above described. He has never been jaundiced, and has found that diet and treatment with potassium iodide make little or no difference in his condition. In one attack he temporarily lost all muscular control of his legs and arms and was so stiff as to be unable to rise from a chair. His feet and hands remained swollen, tender, bluish and cold for three-quarters of an hour. Tactile sensation was diminished and retarded in the arms and legs. His temperature rose to 102° F. during the seizure and next day became subnormal (97.4° F.). During six weeks that he spent in hospital his temperature rose several times to 100° and as often fell to 97.6° F. showing considerable fluctuation between the paroxysms. While in hospital the boy was given potassium iodide up to 3ii per diem without benefit, as regarded his attacks, although he gained 15 pounds in weight.

The patient's appearance strongly suggests congenital syphilis, and his expression is that of a degenerate. The bridge of the nose is broad and flat, the teeth are strikingly of the Hutchin-

* Read before the Association of American Physicians, at Washington, D. C., May 14, 1903.

son type and the palatine arch is narrow and extremely deep; the arterial walls are thickened, and there is a pulmonic systolic bruit; the superficial lymphatic glands are prominent. The boy's expression is dull and his manner listless. Physical examination of the lungs and abdominal viscera was entirely negative. The heart was normal in size but intermittent in action at times. The blood examination showed no anemia. When he was first in hospital in 1899, the urine was repeatedly examined, and showed ordinary variations from alkaline to acid, from 1.014 to 1.028 in specific gravity, and from 50 to 70 ounces in quantity. Phosphates were present in excess, and during the paroxysms albumin and hemoglobin were present, but only at such times as proved by repeated examinations. On one occasion only were red blood corpuscles found in the urine, which were shriveled and deformed. Two specimens examined for me by Dr. Hastings January 28, 1903, in connection with my dispensary clinic, which were passed during a paroxysm gave a marked coagulum of albumin, acidity normal soluble, triple and amorphous phosphates in excess: sugar, casts and red blood corpuscles were absent. The first of these specimens voided at the commencement of the attack showed no hemoglobin, although, as stated, albumin was present. The second specimen showed oxyhemoglobin with the spectrum. A third specimen voided the following morning, presented neither hemoglobin nor albumin.

On the day following an attack, the boy still gives evidence of prostration, having a sallow complexion and haggard face. He is mentally dull and physically weak between the paroxysms, so that he has been unable to undertake continuous employment. As his father expressed it "his entire nervous system seems unstrung."

When I last saw the boy he had signs of an intermittent hydrarthrosis (hydrops articulorum intermittens), affecting the right knee, which at intervals of a few weeks becomes greatly swollen, and the integument over it becomes discolored: the condition is not painful, nor does is seriously interfere with walking.

In this patient paroxysms have been induced by cold applied to the hands or feet, and in a few instances the only apparent exciting cause was mental emotion.

Case II.—This patient is a native American boy, of seventeen years, who was employed in a drug store. He was admitted to the Presbyterian Hospital, where, during a portion of his stay he was in the service of Dr. F. P. Kinnicutt, through whose courtesy I am permitted for the first time to publish the case. The patient's family history is negative, with the exception of the fact that his father was confined in an insane asylum, which, as in the previous case, adds confirmation to the fact that in many instances of hematinuria an hereditary history of neuroses, degeneracy or other disorders of the nervous system is obtained. The boy's parents were said to be non-syphilitic, but as an infant he had snuffles and at two months of age a suspicious eruption upon his hands and soles of the feet, which was protracted for three weeks. His incisor teeth were very irregular, a condition which was attributed, however, to an early habit of continuously chewing upon bits of woolen cloth, as he was a very nervous child. When three years old the boy first had paroxysmal attacks consisting of rigors, fever, jaundice and the passage of dark-colored urine. Constipation was present and the stools were white. It was always noticed by the parents that the attacks only were induced by exposure to cold or to a draught of air, and they lasted as long as the child was thus exposed but the symptoms, excepting the jaundice, all disappeared within an hour after removal to a warm room. These attacks continued at intervals, and when the boy was five years of age became serious, the urine being distinctly bloody, and remaining dark-colored for a day of two after an attack. It was also observed that whenever the fingers were placed in cold water they became purple, mottled and numb. Subsequently the boy learned to remain indoors during cold weather so that attacks were infrequent.

When at the age of thirteen years, similar attacks to those above described were observed with the addition of large urticarial swelling of the face and hands; the face became flushed and the ears and nose were notably swollen. Epigastric cramps were complained of with frequent bilious vomiting. After the patient's last attack before admission to the hospital he is said to have voided bloody urine for two weeks. During the summer the boy has always felt well, but in winter has been often ailing with malaise, constipation, and anorexia, although in the intervals between the attacks he remained fairly comfortable. On admission to the hospital the patient was in the midst of a paroxysmal attack, and the feet were slightly edematous. Aside from slight enlargement of the spleen, which was palpable half an inch below the margin of the ribs, the viscera appeared normal. The urine contained blood pigment, a few red blood corpuscles, indican, a trace of albumin and granular casts: the specific gravity was 1.020. The temperature was 100.2° F. and the pulse 68. The blood pressure registered 112 mm. of mercury. The patient improved in a few hours, and subsequently an attack was experimentally induced by immersing the patient's hands for only two minutes in water at 60° F. A red line of demarcation formed upon the wrists at the level of immersion, and the hands became swollen, mottled and purple. Upon the use of friction to the hands, or after their immersion in warm water the edema subsided. The patient remained under observation in the hospital for more than a month, during which time his weight rose from 106 to 114 pounds and the albuminuria disappeared. He was treated simply with iron and laxatives.

These two cases are noteworthy for the early age (three and four years respectively) at which the symptoms began, for their long duration

(fourteen and sixteen years), the prominence of urticaria, edema and local cyanosis, and the probable existence of hereditary syphilis.

A diligent search of the literature of paroxysmal hemoglobinuria published during the past forty years reveals only 206 reported cases. Owing to the meager reports of many of the cases, and the lack of blood examinations and of accurate urinalysis in some of the earlier ones, it is impossible to give data in percentages of exact figures, but a sufficient number of accurate observations remain to justify certan conclusions as to the etiology of this remarkable affection. Before proceeding to such discussion I shall briefly summarize the more important clinical features:

The geographical distribution of the disease is interesting. The great majority of the cases have been reported about equally from England, Germany and France. A number have also been reported by Italian observers, and a few have been met with in Russia, Austria, Hungary and Rumania. One or two have been reported from Scandinavia. In the warmer countries the disease would naturally be expected not to prevail, and, with the exception of Italy, this appears to be the fact. Two genuine cases have, however, been observed in Smyrna by Diamantopulis, and one in Vera Cruz by Heinemann.

In the United States and Canada the disease is either extremely rare or interest in it has been lacking, for very few cases have been reported, and most of them were among foreigners or those of immediate foreign descent, as in the two cases which I have been able to add to the list. This comparison is possibly due in part to the greater prevalence of hereditary syphilis among the poorer classes of northern European countries.

In females very few authentic cases have been met with, not more than 4 or 5 per cent. of the total number recorded.

The age at which the disease is most often first observed is in the third and fourth decades, but a few examples have been met with in early childhood, and one at the seventy-first year (Bruzelius). One case was definitely known to first develop at the sixty-fourth year (Martienzo). Beroudy reported the case of a gendarme in previous good health who first developed paroxysmal hematinuria in his fifty-second year, and Dr. Druitt's case arose in his fifty-first year. W. M. Roberts and Joseph each saw a case in the second year. One of my reported cases arose in the third year, one in the sixth and I have found records of one case each in the sixth and seventh year, two in the eighth, one in the eleventh and one in the fourteenth year.

The duration of the disease is through a period of many years on the average. A majority of cases have been known to exist for four to eight years. Dickinson and Fagge reported cases of eleven years' duration. The two cases reported in the first part of this article which had lasted fourteen and sixteen years respectively are among the longest recorded. One observer met with a case in which there had been an interval of eighteen years between two attacks.

The temperature usually rises during an attack to 102° or 103° F., reaching a maximum when the urine is most darkly colored. It both rises and falls abruptly. Some cases are afebrile, a few have a subnormal temperature and in severe cases it has been much elevated, in two reaching 105° and 105.2° F. respectively (Heinemann, Saundby), in one 104° F. (Pye-Smith) and in one 103.4° (Bristowe).

The pulse is usually quickened and sometimes becomes rapid and feeble or intermittent during the height of the attack. A *bruit de souffle* may be heard in the veins of the neck, but heart murmurs do not develop. Respiration is unaffected, except that the rate may be slightly increased commensurately with the temperature.

Chills are of frequent occurrence. There may be one severe initial rigor, or a succession of moderate chills, or the patient may feel cold throughout the attack. Of the 12 attacks observed by Prior, of Bonn, in the same patient, eight began with a decided chill. Sweating has been frequently observed.

Pain is a prominent symptom in many cases. It is felt chiefly as a dull ache in the lumbar region but may radiate forward over the abdomen, or into the testicles. The legs and thighs are usually stiff and either numb or painful during the height of the paroxysm. Abdominal pain is often colicky in character, as in the two cases above cited in detail. In Dr. Druitt's personal case he experienced considerable vesical pain. The spleen has been found slightly enlarged in a few cases, and also the liver, and in a case of von Leube's, both these organs appeared tender on pressure.

Jaundice is a common symptom, being noticed in about 15 per cent. of cases. It is of mild grade, appears rapidly with the paroxysm, and either subsides with it or outlasts it by two or three days. It is unaccompanied by biluria, and the stools are seldom of abnormal pallor. It is uncertain whether the jaundice is of hematogenous or hepatogenous origin, but most observers believe it to be of the latter type.

The urinalysis is distinctive and diagnostic. Albuminuria of slight degree is an almost invariable accompaniment of the attacks, disappearing usually in the intervals. Both paraglobin and serum albumin are observed in varying proportions. In Bristowe's case the quantity of globulin was double that of serum albumin. Hyaline and granular casts may be present also. Several clinicians, (Grandeau, A. Brault, Saundby) attest the occasional observation of paroxysmal attacks of albuminuria unaccompanied by hematinuria. The albuminuria in such cases may be accompanied by urticaria, cyanosis and other symptoms of the more typical paroxysm, and is induced by similar causes, *i.e.*, fatigue or exposure to cold. In subsequent attacks the same patient may have hematinuria. Saundby reports a case in which attacks of hematinuria with albuminuria alternated with attacks of albuminuria alone. The

quantity of albumin is usually very small, often not exceeding 0.3 per cent. (Bruzelius). The quantity of urine voided is somewhat subnormal during the paroxysm, but is usually above normal immediately thereafter and may amount to several quarts. During the paroxysm the frequency of micturition is increased, so that desire to empty the bladder may be experienced every half hour. The time at which the urine is first found to contain blood pigment after the appearance of such primary symptoms as a chill, urticaria, extreme lassitude, etc. is from half an hour to three hours, the average being within an hour. The length of time during which the hematinuria remains varies from two or three to a dozen hours. Exceptionally it may persist until the following day.

The color of the urine naturally varies with the quantity of blood pigment, from dark-brown, or the color of port wine to a chocolate brown—almost black. It is seldom modified by bile pigment and the normal color is usually regained within a few hours of the subsidence of the paroxysm.

The total quantity of blood ingredients voided during a paroxysm is considerable. Salle estimated the proportion of blood represented in the urine (by pigment) as equivalent to 12 parts of blood in 100 of urine. Others (Mesmer, Hayem) give a somewhat lower estimate (7 in 100). In a severe case the total quantity of bloody urine voided amounts to 2 or 3 liters, seldom more. Blood corpuscles are rarely found in the urine, and when present, they are usually few in number and crenated or otherwise deformed. I observed them during one attack in Case I, but not in subsequent seizures. Bruzelius reports a similar observation. Methemoglobin has been found in the urine in several cases, and biluria may be present.

The specific gravity is usually somewhat high —1.025 to 1.027—for the percentage of urea is apt to be increased—in Roberts' case it reached 5.2 per cent. and in Dickinson's case 4.8 per cent.

Oxalic acid is very often present in considerable excess, and a patient of Robin, a young man, voided oxalic gravel.

Examination of the blood presents no constant or diagnostic changes; in fact, many observers have failed to discover any change at all. Others report the finding of poikilocytes, colorless corpuscles and granular degenerated forms, preceding a paroxysm. When attacks have been frequent and severe a moderate grade of secondary anemia is observed. Purpura has developed in several cases. From such observations it is argued that hemoglobinemia precedes the hemoglobinuria. Hemophilia has not been observed in any case reported.

Other symptoms occasionally are observed during the paroxysm, such as nausea and vomiting, with a sensation of epigastric weight and oppression, and diarrhea.

In many cases there are decided evidences of perverted nutrition. A large proportion of the patients belong to neurotic families, and give decided evidence of various neuroses, especially vasomotor, such as urticaria and Raynaud's disease. A man seen by Hilton Fagge lost the margins of both ears from symmetrical gangrene, and finally developed chronic nephritis, and Pye-Smith reported two cases with gangrene of the ears and fingers and toes. In Druitt's case Raynaud's symptoms were present and Osler reported a case complicated by Raynaud's disease and epileptic seizures.

Muscular effort is an exciting cause of the paroxysms in many instances, and in about 4 per cent. of the reported cases it has been the sole exciting cause. In a few more cases it has been an associated factor, combined with exposure to cold. Walking is the special form of effort which usually precipitates an attack. In certain patients walking steadily for an hour or for a distance of only two or three miles invariably is followed by hemoglobinuria; in others, it is not produced short of much more severe exertion, as that of a forced march. In a case reported by Bastianelli, the influence of cold was absolutely excluded; walking induced the paroxysms, but general gymnastic exercises, continued for an hour, failed to do so. Fleischer reports a similar case, that of a soldier who had an attack whenever he walked continuously for an hour, but other forms of exercise were without effect. A third case, observed by H. Koster, was entirely uninfluenced by cold, but forced marching induced attacks. This patient was a man thirty-five years of age, who had contracted syphilis four years before. Five more cases have been reported (L. Dickinson, Kast, Robin), one of them that of a woman twenty-six years of age. In addition to these eight cases in which walking was the exclusie cause of the paroxysms, a number have been observed in which they were induced occasionally by walking, and at other times by cold air or water. Thus Socor met with an engineer, forty-five years of age, whose primary attack was due to cold and fatigue combined, but subsequently any exercise of the legs was a sufficient excitant. Another patient, a young soldier, had a primary attack following exercise alone, but subsequent attacks were induced by cold (Bertelle). Prior personally observed 12 paroxysms in the same patient, 5 of which were due to cold, 3 to exertion, 1 to exertion and a wetting, and the remaining 3 seizures were without assignable cause. Hilton Fagge also reported 2 cases in which attacks appeared without discoverable cause in the warm months of June and August. F. Chvostek advances the theory that those cases which are only induced by walking are akin to functional albuminuria, and are due to functional circulatory disturbance of the abdominal viscera induced by motion, combined with a diminished resistance of the red blood corpuscles.

The influence of cold alone, or of cold and wetting predominates in the great majority of cases. The degree of cold, and the duration of exposure which is necessary to produce a paroxysm varies in individuals, and in the same persons at

different times. A freezing temperature is by no means necessary, especially if the cold be applied to the hands or feet. As a rule a temperature between that of freezing and 50° F. will induce an attack. In sensitive subjects very limited exposure of surface is sufficient, or very brief exposure of the entire body. Thus Ehrlich was able to precipitate an attack in a woman by chilling for 15 minutes one of her fingers which he had previously constricted with a rubber band. Flensburg met with a child of eight years, in whom he was able to precipitate an attack by constricting the arm and immersing it in snow for 5 minutes. Dr. Druitts' first attack occurred while fishing in Scotland in a chilly wind, his second occurred four months later while skating without an overcoat, but subsequently an attack followed 5 minutes' standing in a draughty railway station or a brief drive in a hansom cab against the wind.

One or two patients have been so sensitive to attacks that they were unable ever to go out doors without having one. A common cause of the primary attack is that of falling into cold water, or becoming drenched in a cold rain. In almost all the typical cases attacks can be induced at will by immersing either the hands or feet for ten or twenty minutes in water at a temperature of about 50° F. This is observed even in summer, as in patients of Rosenbach's and Ehrlich's. One of Sir William Roberts' patients was as liable to attacks in summer as in winter, and Bruzelius reports the case of a woman who could reproduce attacks by merely laying the hands for a few moments upon a cold surface, such as marble.

Information from autopsies is lacking, for the paroxysms are never fatal, and patients who die from intercurrent diseases are not likely to do so during a paroxysm, which, from the nature of the case, is brought on chiefly by voluntary exposure to cold or fatigue while in a condition of comparative health. A patient of Prior, of Bonn, developed paroxysmal hematinuria in his thirty-eighth year. Five years later he died of general tuberculosis, but the kidneys were found entirely normal. In Demme's case, post-mortem examination revealed slight enlargement and marked congestion of both liver and spleen, and ecchymoses in the submucosa of the intestine. The kidney tubules were filled with detritus of disorganized red blood corpuscles, but the kidneys were unaltered in structure. Brunelle lost a patient from tuberculosis who had had typical paroxysms induced by slight exposure to cold in winter. The liver was congested, the blood was normal, the kidneys showed a few slender bundles of connective tissue, and slight dilatation of the tubules, but their epithelium was normal. Germoing lost a patient of sixty years of age who had had paroxysmal attacks of hemoglobinuria for three years. The kidneys were found normal, excepting slight pigmentation of the epithelial cells of the tubules, and a slight degree of coagulation necrosis of some of them.

The only disease with which the condition under discussion is associated with a frequency which justifies the assumption of a causative relationship, is syphilis. Of 6 cases reported by Copeman all were syphilitic, and in approximately one-third of all cases a syphilitic taint, either hereditary or acquired, has been noticeable. Still other cases in which syphilis has been a suspected factor have been benefited or cured by antisyphilitic treatment.

The theory of the nature of paroxysmal hemoglobinuria has given rise to much discussion, and the difficulty of formulating a theory of general application is manifest from the number and variety of hypotheses set forth, which are almost as numerous as the reported cases. Thus it has been suggested that the malady originates (1) in the kidneys; (2) the blood in general; (3) the capillaries; (4) the liver; (5) the spleen, in each case arising through nervous shock of external cold; (6) that it is a blood dyscrasia, in which there is a congenital or acquired instability of the red blood corpuscles; (7) that the corpuscles are normal, but there is a fundamental vasomotor neurosis; (8) that the primary shock is not thermic, but mechanical; (9) that there is a special toxemia in operation; (10) that there is a special neurosis producing the attacks.

That the kidneys are primarily at fault is the earliest theory of the origin of hemoglobinuria, as first argued by Harley and Sir William Gull, and later by Hayem and Robin. Harley wrote of an "intense congestion of the chylopoietic viscera of transient and periodic character." The chief experimental support of this theory was offered by Lichtheim, who inserted canulæ into the ureters of a dog, through which he injected sterilized water on the one side and ammoniacal urine on the other. The urine subsequently secreted contained blood pigment from that side only upon which the ammoniacal urine had been injected, that coming from the other side being normal. Roberts also argued in favor of an intense sudden renal congestion, with local dilatation of capillaries and consequent stagnation of the renal blood. Stephen Mackenzie argued that an intense renal congestion forced the blood under pressure into the glomeruli, where hemoglobin was liberated. I am disposed to disregard the renal theory on the following grounds: (1) There is no positive evidence that the kidneys are any more congested than other abdominal viscera, such as the liver and spleen; (2) there is no post-mortem evidence of any distinctive renal changes; (3) the slight degree of exposure to cold which suffices to induce the paroxysms in many cases, cannot reasonably be believed to influence the kidneys; (4) in many cases fatigue or emotional excitement may induce paroxysms, irrespective of cold, and finally certain phenomena of the paroxysms, such as the urticaria, cyanosis, and especially the elevation of body temperature cannot be accounted for upon the basis of a local renal influence, especially as they sometimes, like the albuminuria, are observed without accompanying hematinuria.

The oxalic and uric acid theory of Haig, which has also been supported by Foulerton and Von

Rossem, is discountenanced by the fact that these acids are not demonstrable in excess in any considerable number of cases, nor it is probable that they could be produced in quantity in the very short time (a few minutes only) intervening between the moment of exposure of the patient and the onset of symptoms of the paroxysm. There is, moreover, no evidence that the disease especially affects the gouty or those suffering from the uric acid diathesis or oxaluria.

The theory of Brunelle and others that congestion of the liver results in excessive destruction of red corpuscles cannot be regarded as the sole cause of the hemoglobinuria for the same reasons as those above stated in regard to the influence of the kidneys. Ralfe holds that when only a few red corpuscles are destroyed the globulin is secreted as albumin and the pigment is cared for by the liver and spleen. Destruction of a large number of corpuscles in the liver, however, permits the hemoglobin to be excreted by the kidneys. Ponfick, and subsequently Litten, have argued that the blood may contain an excess of free hemoglobin without its excretion in the urine, that the liver disposes of ordinary quantities of hemoglobin, as it does of sugar, but as in the case of glycosuria, hemoglobinuria may result when the normal hepatic functions are overtaxed.

It has been argued that the disorder originates in the blood itself (Fagge). As against this hypothesis, it is impossible that any considerable chilling of the entire blood in the body can follow such slight exposure to cold, as, for instance, that of cooling one finger, or laying the hand upon a cool surface. This hypothesis, moreover, fails to explain the attacks induced by fatigue or purely neurotic influences. Of more importance is the theory of a special blood dyscrasia, consisting in a weakness of the red corpuscles (Copeman) or a developmental fault (Henocque), either congenital or acquired, whereby the red corpuscles are readily dissociated by ordinarily trivial causes, such as capillary dilatation and stagnation, with accumulation of carbonic acid. H. Chvostek favors this view, while denying that cold *per se* affects the blood; his theory is that the feeble corpuscles are disorganized mechanically. Through the influence of cold or vascular changes resulting from fatigue, capillary stasis ensues, either in peripheral vessels or the viscera, and such stasis results in hemoglobinemia. Through abnormally increased innervation of the peripheral vessels, and consequent rise of bloodpressure in the viscera, hemoglobinuria follows. In support of this theory Chvostek cites experiments with amyl nitrite, in which, by dilatation of the peripheral vessels, hemoglobinuria was controlled.

The argument that paroxysmal hemoglobinuria is due to a condition of constitutional degeneracy, inherited or acquired, is open to a few exceptions. A large proportion of patients is syphilitic, but by no means all. A considerable number belongs to families in which there has been ancestral degeneracy, in the form of insanity or exaggerated neurotic tendencies. But in still other patients no such condition or history can be traced, or the disease may first develop so late in life as to preclude the probability of inherited or congenital dyscrasiæ, which have never given earlier manifestations. For example, Bamberger cites the case of a coachman, forty-nine years of age, who was in robust health up to his forty-seventh year, when the hemoglobinuric attack first began. The attacks could be induced by immersing the feet in cold water for five minutes. They were accompanied by contraction of the pupils, which also became insensitive to light. Pye-Smith reported a case developing in a man past sixty years of age. Jas. Tyson and Allen J. Smith suggest the possibility of participation of the adrenals and their associated sympathetic ganglia in the hemoglobinemic process. In concluding this discussion of the etiology of paroxysmal hemoglobinuria it seems that no theory is satisfactory which does not attribute the chief influence to the nervous system. The number, variety, suddenness and transitory nature of the symptoms cannot be otherwise satisfactorily explained. The chills, the temperature, the cyanosis, the urticaria, the pain and other sensory disturbances, and the variations of the pulse are all nervous phenomena of equal prominence and importance with the hemoglobinuria. The latter is, in fact, merely incident to the attack, not its sole important feature, and, as has been stated above, it may be absent from an otherwise entirely typical paroxysm. Further confirmation of this view is found in the fact that so large a proportion of the patients are either themselves degenerate or neurotic, or possess such inheritance. With such profound vasomotor neuroses as give superficial evidence, it is easy to conceive that the deep-seated viscera, such as the liver and spleen may have their functions temporarily disturbed, with the resulting production of hemoglobinemia from which is a simple step to hemoglobinuria. I would submit, therefore, that paroxysmal hemoglobinuria may be defined as a *profound neurosis, chiefly affecting the vasomotor system, and called into activity by exposure to moderate degrees of cold, by muscular fatigue or mental emotion.*

The features of diagnosis between malarial hemoglobinuria and the paroxysmal type are distinct. With the former the incidence of the disease in the tropics, its periodicity, its relation to quinine, the frequent presence of the plasmodium malariæ, and of typical cachexia, and finally the longer duration and fatality of the attacks are characteristic. Malarial hemoglobinuria usually presents prodromal symptoms, lasting through a period of hours or days, such as fever, malaise, anorexia, and lumbar pains; vomiting is more common, chill more intense, diarrhea is severe, and anuria and nephritis may develop. Besides these features, in malaria there is an absence of the special angioneurotic symptoms that characterize the paroxysmal form, such as urticaria, local cyanosis, and modifications in arterial tension.

In the paroxysmal form the type of patient—usually more or less degenerate—is different, and so are the influence of cold and the methods and results of treatment. In fact, the presence of hematin or hemoglobin in the urine is the only symptom which the two disorders uniformly present in common.

Other types of hemoglobinuria are readily distinguished from the paroxysmal form by their different etiology and behavior; such are the hemoglobinurias following extensive burns, the ingestion of chemical poisons, such as potassium chlorate, turpentine, carbolic acid, phosphorus, the mineral acids; organic poisons such as that of the mushroom, *Morchella esculenta,* and traumatic cases, such as have been reported by Saunders and Filatow. In all these forms of hemoglobinuria the distinctive paroxysmal type is lacking, with its features of fever and angioneurotic symptoms, and the etiology is plainly found in a direct destructive action upon the red corpuscles without associated vasomotor phenomena.

It is interesting to note that horses may have hemoglobinuria, when after a long period of stabling, with high feeding, they are taken out and driven hard or exposed to cold. Prof. James Law, in describing this condition (in the Special Report on Diseases of the Horse, published in 1890 by the Bureau of Animal Industry of the U. S. Department of Agriculture), calls attention to a special anatomical condition of the liver which exists only in solipeds, whereby the vascular contents of the liver and portal veins may be aspirated directly into the general circulation through certain large branches of the portal system. V. Babes has described an infectious form of hemoglobinuria occurring in Rumanian cattle.

The treatment of paroxysmal hemoglobinuria is mainly satisfactory in the markedly syphilitic cases, several of which have been reported as cured by the use of mercury and potassium iodide (Fagge, Ehrlich, Mackenzie). Removal to a warm climate during the winter months is completely preventive, as it was in the case of Dr. Druitt, who remained free from attacks while residing in India.

Patients who are unable to emigrate in winter can prevent attacks at home to a great extent by avoiding sources of mental and bodily fatigue, and by being warmly clad on cold or chilly days. The wearing of heavy woolen undergarments and fur-lined gloves and shoes will do much to ward off attacks. The seizures are most likely to take place in the early morning hours, and a chill-damp atmosphere is worse than clear dry cold.

The use of stimulants should be prohibited, for the depression which follows may render the patient more susceptible to the influence of cold. Medicines in general, aside from antisyphilitic treatment, are of little value for this affection, but Saundby recommends the use of calcium chloride as an hemostatic, not above gr. vi. to be taken within two hours. H. Chvostek believes that amyl nitrite inhalations may abort an attack, and the use of arsenic has been recommended by several clinicians. Tyson suggests the administration of suprarenal extract, but thyroid extract might prove more beneficial, as it possesses such remarkable effect over many functional and nutritional disorders, and, unlike the suprarenal extract, does not raise arterial tension, a condition which many have claimed is a causative factor in hemoglobinuria.

Attacks may be aborted by a hot bath, or by going to bed with hot water bottles and blankets, and by taking a simple hot draught or cup of hot broth or milk. Diffusible stimulants are useful, such as chloroform water, Hoffmann's anodyne, or aromatic spirits of ammonia.

REMOVAL OF A HEAVY SILK LIGATURE FROM AROUND THE RIGHT PNEUMOGASTRIC NERVE—CLINICAL SYMPTOMS BEFORE AND AFTER REMOVAL.*

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Mr. X., a young man of twenty-five years, first consulted me in March, 1900. As a boy he suffered from enlarged glands on each side of the neck; these at times suppurated and were opened, at times they broke and discharged spontaneously. His first radical operation was in 1891, at which time Dr. W. T. Bull removed a large mass from the left side, the wound healing promptly. There was but slight further enlargement of the glands on that side but the trouble continued with those on the opposite or right side. No further operation was performed, however, until the latter part of January, 1900, at which time the right side of the neck was operated upon in another city. At this time there was a mass about the size of a hen's egg. As best one can judge, from the account given by the patient, the operation was a difficult one; there was much bleeding and it was said that to check profuse hemorrhage heavy silk ligatures were passed around the deep vessels by means of an aneurism needle. The patient says:

"My physician told me that I went into collapse on the table and that he was unable to complete the operation. When I came out from under the anesthetic there was severe, continued, spasmodic coughing, great distress and complete loss of voice. Great swelling of the neck and high fever followed the operation. Loss of voice continued for two or three weeks. During the first few days there was a constant, irritable, distressing cough. This gradually subsided, but any pressure in the region of the wound excited severe coughing."

When the patient came to see me some five weeks after this last operation there was found an old scar on the left side of the neck and a recent scar on the right side. The latter extended from a little below the mastoid, two-thirds of the way down to the collar bone. There was an opening at the upper part of this scar and an-

* Presented at the Washington Meeting of the American Surgical Association, May 12, 13 and 14, 1903.

other opening at the lower part, each discharging a moderate amount of thin pus. Irrigation showed the sinuses to communicate. There was a small bunch of glands at the upper part of the neck on the right side and two or three small segregated glands below and behind the angle of the jaw on the left side. The scar on the right side of the neck was exceedingly irritable; even slight pressure at any point in its upper third occasioned severe, spasmodic coughing. Coughing was also excited by irrigation. Unsuccessful attempts were made to heal the sinus. It was very gently scraped under cocaine but this excited so much coughing that it was thought wise to desist. Heavy silk ligatures, having lumen half the diameter of a lead pencil came away in March and June; still the sinus did not heal. At this time I advised the patient not to have a radical operation because I feared that dangerous coughing might come on while he was under the anesthetic. It was thought that if further ligatures were present they would probably come away spontaneously. In the autumn of the same year the patient consulted Dr. V. P. Gibney, in New York, who, together with Dr. H. T. Pershing, of Denver, concurred in the thought that delay was preferable to operation.

The patient spent the last part of the year 1900 in the East. On January 20, 1901, he reappeared in my office, the sinus having persisted. He said that three weeks before, while at his home in Kentucky, the end of a heavy silk ligature presented at the upper end of the sinus. His physician there endeavored to withdraw it but it was firmly fixed and even moderate traction on it set up extreme and long-continued coughing. I siezed the end of the ligature with an artery clamp and pulled pretty hard, but the ligature did not come away and the traction occasioned intense coughing, pain, shortness of breath and vomiting. The patient sank to the floor with a cyanosed face, hardly able to get his breath. The pulse was slow and full. It was some five minutes before his condition became good. At this time it seemed probable that the ligature was around the pneumogastric nerve, and Dr. H. T. Pershing, Professor of Nervous and Mental Diseases in the University of Denver, was asked to see him in consultation. Dr. Pershing concurred in the diagnosis and joined in recommending operation under a general anesthetic. This was carried out at St. Luke's Hospital January 22, the anesthetic being administered most carefully by Dr. Edward Delehanty. Ether was deliberately chosen and started, but violent coughing with embarrassed respiration accompanied it, so chloroform, very slowly and carefully given, was substituted. Under the chloroform respiration was good. A long incision was made with the sinus opening at its center and very careful dissection carried out. In the depth of the wound beneath the sternomastoid muscle the loop of the ligature was encountered. This lay one-half inch above the great cornu of the hyoid bone, two inches behind the angle of the jaw, 1½ inches below the apex of the mastoid process. The ligature lay in a large mass of granulation tissue. The slightest interference with this portion of the wound and the slightest traction on the ligature brought on alarming coughing and cyanosis. With extreme care the loop of the ligature was cut and the ligature itself withdrawn. It was tied in a hard, square knot; it had a lumen about the size of a lead pencil. The pneumogastric nerve itself was not definitely recognized. The angles of the wound were sutured, the middle part gently packed. The after-course was smooth and uneventful, the wound was completely and permanently healed in three weeks. For some time after the removal of the ligature firm pressure at its site occasioned moderate coughing; this, however, grew gradually less and two or three months after operation the patient was nearly free. He has never, however, become completely free. I have seen him from time to time and last examined him in March of the present year. At this time deep pressure at the place where the ligature was found made him cough a little. There were some small glands at the upper part of the neck on both sides but not enough to seem to warrant operation. The patient was living a fine outdoor life, riding after cattle a large part of each day. His lungs were examined by Dr. S. G. Bonney and found to be free. His hard muscles and generally rigorous physique betoken excellent health. The sinus of the neck has remained closed.

While I was unable anatomically to recognize the pneumogastric nerve in the wound at the time of operation, I have no doubt* that it was the structure around which the ligature lay. The symptoms during and after the operation at which the ligatures were applied together with the physiological symptoms accompanying pressure or traction, and the lumen of the ligature itself, seem to stamp the diagnosis with a fair degree of certainty.

A REVIEW OF SOME RECENT INVESTIGATIONS RELATING TO THE PANCREAS.

BY T. STUART HART, A.M., M.D.,
OF NEW YORK.

Since the publication of Pawlow's "Work of the Digestive Glands," research in the domain of pancreatic physiology has received a new impulse. Pawlow advances the theory that pancreatic secretion is evoked by the entrance of acids and certain foods into the duodenum. He believes that this is brought about through the agency of a nervous reflex, and that different nerve endings respond to distinct kinds of food thereby exciting a difference in the resulting pancreatic secretion. He found that it was possi-

* The following letter strengthens this opinion:

I have never had any doubt that the pneumogastric nerve was included in the ligature removed from the neck of Mr. X. The location of the irritable spot, the violence of the respiratory spasm even when under chloroform, the vomiting, the history of onset immediately after operation and the prompt subsidence after removal of the ligature all support this opinion. Howell T. Pershing, M.D.
Denver, April 1, 1903.

ble to excite pancreatic secretion by stimulating the divided vagus or splanchnic nerves and believes that the vagus contains in addition some fibers which may act in an inhibitory manner.

Von Bechterew (*Archiv f. Anat. u. Physiol.*, 3 u. 4, p. 264, 1902) reports that Narbut and he have found in dogs a center for pancreatic secretion, situated in the middle part of the precruciate gyrus. Stimulation of this area causes an increased flow of pancreatic juice.

The mechanism of pancreatic secretion has been studied by Poplieski (*Gazette Clinique de Botkin* [Russ.], 1900) and by Wertheimer and Lepage (*Journal de Physiologie*, III, p. 335, 1901), they have shown that the introduction of acid into the duodenum still excites pancreatic secretion after section of both vagi and splanchnic nerves, or after destruction of the spinal cord, or even after complete extirpation of the solar plexus. These observers believe that the secretion was evoked by peripheral reflex action, the centers of which are to be found in the ganglia scattered through the pancreas. Wertheimer and Lepage further discovered that if they isolated a loop of jejunum from the duodenum and then introduced a few drops of acid into the isolated portion, pancreatic secretion was excited, from this they conclude that the reflex centers thus utilized were located in the solar plexus.

Bayliss and Starling (*Journal of Physiology, London*, XXVIII, No. 5, Sept. 12, 1902) report as a result of their investigations that the secretion of pancreatic juice following the introduction of acid into the duodenum is not due to a nervous reflex. They repeated and verified the experiments of Poplieski and Wertheimer. In another experiment they isolated a piece of the jejunum, dissecting out the mesenteric nerve and dividing it so that the isolated piece of gut was attached to the body merely by its arteries and veins. Acid was then introduced into the duodenum, with the result that pancreatic secretion was evoked. On introducing acid into the isolated part of the jejunum the same result followed. As the loop of intestine was joined to the body only by blood vessels, the secretion of pancreatic juice in this case must be due to some chemical substance entering the circulation. Acid will not cause such secretion when injected into a blood vessel, therefore something is probably produced by the epithelium lining the gut, which has the power of stimulating the pancreas to secrete. The next step was to scrape the mucous membrane from a piece of gut, treat it with hydrochloric acid, rub up with sand in a mortar and filter. The extract thus obtained was injected into a vein. The results obtained were, first, a fall of blood pressure; second, after a latent period of seventy seconds a flow of pancreatic juice. This extract they call "secretin" and the antecedent body "prosecretin." Secretin is not an enzyme since it is not less active after boiling. The distribution of prosecretin is found to be in the duodenum and jejunum, not lower down in the intestine. The secretin of the cat, rabbit, ox, monkey, man and frog are all active on the pancreas of the dog. The secretin of the dog, rabbit, monkey and man are active on the rabbit. Hence it is probable that secretin is the same substance in all of these animals.

The pancreatic juice obtained by stimulation with secretin is not active in trypsin until mixed with "enterokinase" (Pawlow) from the intestine. Secretin does not stimulate the activity of the salivary gastric or intestinal glands. The action of secretin is not due to the fall of blood pressure and vasomotor dilatation because (1) certain other substances (*e.g.*, albumose) may cause vasodilatation in the abdominal viscera without pancreatic secretion; (2) by special preparation secretin may be obtained which acts powerfully on the pancreas, but very slightly on blood pressure. The effect of secretin is unaltered by the previous injection of atropine.

Conclusions.—1. The secretion of the pancreatic juice is normally evoked by the entrance of acid chyme into the duodenum, and it is proportional to the amount of acid entering (Pawlow). This secretion does not depend on a nervous reflex, and occurs when all nervous connections of the intestine are destroyed.

2. Contact of the acid with the epithelial cells of the duodenum causes in them the production of a body (secretin), which is absorbed from the cells by the blood current, and is carried to the pancreas, where it acts as a specific stimulus to the pancreatic cells, exciting a secretion of pancreatic juice proportional to the amount of secretin present.

3. This substance, secretin, is produced probably by a process of hydrolysis from a precursor present in the cells which is insoluble in water and alkalis, and is not destroyed by boiling alcohol.

4. Secretin is not a ferment.

5. The pancreatic juice obtained by secretin injection has no action on proteids until "enterokinase" is added; the action on fats is increased by the addition of succus entericus. It is, in fact, normal pancreatic juice.

6. Secretin rapidly disappears from the tissues, but cannot be detected in any of the secretions.

7. It is not possible to obtain a body resembling secretin from any tissues of the body other than the mucous membrane of the duodenum and jejunum.

8. Secretin solutions, free from bile salts, cause some increase in the secretion of bile. They have no action on other glands.

9. Acid extracts of the mucous membrane normally contain a body which causes a fall of blood pressure. This body is not secretin, and the latter may be prepared free from the depressor substance by acting on desquamated epithelial cells with acid.

10. There is some evidence of a specific localized action of the vasodilator substances which may be extracted from various tissues.

Colnheim (*Münchener med. Wochenschrift*,

XLIX, 52, 1902), gives a review of some of his work done in Pawlow's laboratory. Among the results, he comes to the conclusion that trypsin does not occur as such in the pancreatic secretion, but as a zymogen. This zymogen is converted in trypsin by the "enterokinase," a substance which is produced in the intestine, when it is stimulated by the flow of pancreatic juice into it. Ptyalin appears as such in the pancreatic secretion. The *fat-splitting ferment* is probably made active by the action of the bile upon it. The normal stimulus for pancreatic secretion is the hydrochloric acid of the stomach.

Pancreatitis has of late been the subject of considerable investigation. Opie (*Journal of Experimental Medicine,* Vol. V, No. 4, 1901), distinguishes two types.

a. Interlobular.—The new connection tissue is mainly between the lobules, invading them only secondarily and implicating the islands of Langerhans only when the sclerotic process has reached a very advanced grade.

b. Interacinar.—The process is diffuse invading the lobules and separating the individual acini. The islands of Langerhans are implicated. This may occur quite early.

Out of 11 cases of the *interlobular* type only one showed diabetes, and this of mild type. This case showed also the involvement of the islands of Langerhans. In four cases, all of the *interacinar* type, diabetes was present.

The study of the islands of Langerhans in the lower animals led Opie to the conclusion that the islands consist of cells having the same origin as the glandular acini, and which are independent of the secretory apparatus, but are in intimate relation with the vascular system and suggest that their function is to furnish some substance to the blood, having to do with the assimilation of carbohydrates, or which destroys some substance which hinders it.

Opie (*Jour. Exp. Med.,* Vol. V, No. 5, 1901), reports a case of acute diabetes. Examination of the pancreas showed the glandular epithelium to be normal, the islands of Langerhans, however, showed extensive hyaline degeneration. Nothing else was found to account for the diabetes. Opie is of the opinion that certain forms of diabetes are due to a lesion of the pancreas which affects the islands of Langerhans, but not the glandular epithelium. In seven cases of diabetes which he examined he found no lesion of the pancreas.

Wright and Joslin (*Jour. Med. Research.* Vol. I, Nov., 1901), examined the pancreas in nine cases of diabetes. Hyaline changes in the islands were found in two cases. In six cases the pancreas was normal. The ninth case showed an exudation of leucocytes and fibrin in the connective tissue septa of the pancreas.

Weichselbaum and Stengel (*Wien. klin. Woch.,* Oct. 10, 1901), studied 18 cases of diabetes and found the pancreas affected in 17. The patients' ages varied from fourteen to seventy-five years, the diabetes had existed for periods of from three weeks to nineteen years. Seventeen cases showed increase in the connective tissue of the pancreas; 7 showed fatty infiltration of the connective tissue septa; 1 showed decided increase of connective tissue between the lobules. They believe the increase in connective tissue is secondary to atrophy of the cells. They conclude that in their cases the process was a genuine atrophy affecting the secretory cells, but involving the islands of Langerhans more severely.

The cause of this atrophy is unknown, but it has been found in marasmus, syphilis and obstruction of the duct; in these conditions, however, the island of Langerhans usually escape.

They believe pancreatic diabetes is due to an atrophy of the parenchyma, which involves the islands of Langerhans particularly. Possibly the islands furnish some substance to the blood that hinders its retention of sugar.

Herzog (Trans. Chicago Path. Soc., Nov., 1901) reports 4 cases of diabetes. In one case there was hyaline degeneration of the islands of Langerhans, and in 3 others there was an interacinar fibrosis, with a reduction of the number of the islands and a degeneration of the cells of those which remained. Herzog also reported 8 cases (*Virchow's Archiv,* Band 168, Heft 1, 1902), in all of which there were undoubted changes in the islands.

Schmidt (*Münch. med. Wochenschrift,* Jan. 14, 1902), examined 23 cases of diabetes. He found the islands of Langerhans unchanged in 8. In one there was simple atrophy of the pancreas, such as is often found in non-diabetic subjects. In other cases there were focal areas of inflammation, but not seriously involving the parenchyma. In none of his cases was there a diminution in the number of the islands. In 3 cases, however, he found a chronic interstitial pancreatitis, affecting particularly the islands of Langerhans. But he claims that a similar condition has been observed in extreme cases of senile atrophy of the pancreas.

Janeway and Oertel report a case of diabetes (*Virchow's Archiv f. Path., Anat. u. Phys.,* Bd. 74, 1903) without pathological changes in the pancreas.

Ssobolew (*Virchow's Archiv,* Bd. 168, H. 1, 1902) has made a number of experimental studies on the significance and changes in the islands of Langerhans. After ligation of the duct of Wirsung the pathological changes are mainly in the glandular tissues, the islands being very resistant and practically unchanged. When parts of the pancreas are transplanted, the glands become completely atrophied, although the islands are unchanged. Embryologically the islands appear to be formed much earlier than the glandular tissue of the pancreas. In 18 cases of pancreatic disease which he investigated, 17 of sclerosis and one of lipomatosis, he found the islands very resistant. In 15 cases of diabetes and one of acute glycosuria he found the islands normal in 2 cases; in 4 they could not be found; in 9 they showed

considerable diminution in number and some fatty degeneration. In the case of acute glycosuria there was parenchymatous degeneration of the pancreas and degeneration of the cells of the islands. He makes the suggestion that since feeding of the ordinary pancreas in diabetes is not of much value, it might be worth while to try feeding the pancreas of new-born calves in which the islands are well developed and the glandular tissue hardly formed.

Weichselbaum and Stengel (*Wiener klin. Wochenschrift*, 1902, XV, 969) have added 17 cases to their previously reported ones; 2 cases were not considered as clinically "pancreatic diabetes" but as glycosurias of other origin. In the autopsies on the remaining 15 cases the islands of Langerhans were found to be diminished in every instance; in some cases they were entirely absent, in others they were diminished in size and showed definite changes, (*a*) atrophy, (*b*) liquefaction, or (*c*) connective tissue increase. After reviewing at some length the arguments *pro* and *con* for the dependence of diabetes on changes in the islands of Langerhans they reach the following conclusions: (1) In all cases of pancreatic diabetes there are found changes in the islands sufficient to impair their function. These changes are not present in non-diabetics. The changes in marasmus are quite different. (2) In these cases the remaining pancreatic tissue shows very slight or no change (certainly insufficient to cause diabetes). (3) Cases of glycosuria in which no changes in the islands are found, admit always of an explanation which is reconcilable with the above-mentioned theory. (4) The histogenesis and structure of the islands make it probable that they have a wholly different function from that of the true gland, parenchyma of the pancreas. (5) The experimental observations of Ssobolew and Schultze, as well as one of their own cases, show that the islands behave in an entirely different manner toward the agent producing pancreatic diabetes than toward those poisons which produce the other forms of pancreatic atrophy.

Flexner and Pearce (Trans. Ass'n Amer. Phys., Vol. XVI., 1901) reach the following conclusions: (1) pancreatitis follows upon a great variety of insults to the pancreas, and is capable of developing with great rapidity. The introduction of such a foreign body as artificial gastric juice into the pancreas gives rise to degeneration, hemorrhage, and emigration of leucocytes within the brief space of one to two hours. (2) Chronic pancreatitis may represent the remote result of acute destructive lesions of the pancreas having a certain grade of severity. (3) Perversion of normal secretions whereby they enter the pancreas, as illustrated by the effects of gastric juice and bile, are efficient causes of pancreatitis, associated with hemorrhage and fat necrosis. (4) The presence of blood alone in the tissues of the pancreas does not set up an acute inflammation; the tendency is for the rapid production of a chronic proliferative interacinar and intra-acinar pancreatitis. (Experiment of injecting blood into duct of Wirsung. Various writers have held different opinions as to whether the hemorrhage was the cause or the result of pancreatitis.) (5) The effects of blood are not produced by blood-serum separated from the corpuscular elements. (Blood serum without corpuscles injected and no pancreatitis followed.) (6) The spleen has no influence upon the development of pancreatitis and the production of fat necrosis. (Dogs splenectomized, then pancreatitis and fat necrosis could be produced by injecting hydrochloric acid into the duct of Wirsung.) (7) Fat necroses attend all forms of pancreatitis and are more numerous and widespread the more acutely the pancreatic lesions develop. They may appear as early as eight hours following injury to the pancreas. (8) Glycosuria appears quickly after injury to the pancreas; it may persist for several days and then disappear, although the pancreas has suffered permanent partial injury.

Opie (Trans. Ass'n Amer. Phys., Vol. XVI, 1901) has collected 39 cases of hemorrhagic and gangrenous pancreatitis in which gall-stones were found in the gall-bladder or in the bile ducts. In 8 of these the stone was found near the orifice of the common duct. A stone so situated may convert the bile duct and the duct of Wirsung into a continuous passage and bile may thus be directed up the duct of Wirsung.

In one autopsy the stone was found in the diverticulum of Vater. In this case the pancreatic duct was stained bright green, the pancreatic tissue near the head was normal but by a quick transition this changed to necrotic tissue. The islands of Langerhans were normal in head and tail but not in the area of necrosis. There was a hemorrhagic pancreatitis with abdominal fat necrosis.

Opie considers that the pressure of the gall-bladder (a muscular organ) is sufficient to force bile into duct of Wirsung when there is obstruction at the orifice. He studied the anatomy of the diverticulum of Vater in a number of cases (20), in 3 cases he found a separate orifice for the two ducts. Usually the orifice is smaller than any other part of the bile duct; hence a natural place for calculi to become impacted.

Hemorrhagic pancreatitis with fat necrosis has been produced by Hlava by injecting artificial gastric juice into the pancreatic duct, this he supposed might be caused by anti-peristalsis. Oser produced hemorrhagic pancreatitis by injecting 4 c.c. of $^1/_{10}$ normal sulphuric acid into the duct of Wirsung. Carnot produced hemorrhagic pancreatitis by injecting into the duct papain 0.2 gm. in 30 c.c. water, diphtheria toxin and a suspension of b. coli communis. Flexner's experiments have already been reviewed.

Opie injecting *bile* into the pancreatic duct of dogs produced pancreatitis and fat necrosis in 5 cases. In 2 other cases he injected bile into the duct after ligation of the duct near the orifice, in both cases there was death with hemorrhagic pancreatitis and fat necrosis.

As a result of the study of 29 cases of chronic

pancreatitis with the special object of determining the causes and varieties, Opie (*American Journal of the Medical Sciences,* May, 1902) says "Chronic inflammation of the pancreas is rarely primary, it is associated with, and is usually the result of, changes in other organs, the adjacent part of the gastro-intestinal tract, the liver and the bile passages." Chronic interstitial pancreatitis is slightly more frequent in males than in females. Two-thirds of the total number of cases occur between the ages of forty and sixty years. The most frequent cause of chronic pancreatitis is obstruction of the duct of Wirsung, due to pancreatic calculi, to biliary calculi in the terminal part of the common bile-duct, or to carcinoma invading the head or body of the gland. Duct obstruction may be followed by the invasion of bacteria, which take part in the production of the resulting lesion. Ascending infection of the unobstructed duct of Wirsung may follow an acute lesion of the duodenum or of the bile passages, and may cause chronic inflammation. In cases which have given a history of long, persistent vomiting, chronic diffuse pancreatitis may be found at the autopsy, and is probably the result of an ascending infection of the gland. General or local tuberculosis is occasionally accompanied by chronic diffuse pancreatitis, affecting chiefly the interstitial tissue of the gland. Chronic interstitial pancreatitis is not infrequently dependent upon the same etiological factors, notably alcohol, which produce cirrhosis of the liver, and in about one-fourth of the cases the two lesions are associated. Following duct obstruction and ascending infection the lesion affects principally the interlobular tissue, only secondarily invading the lobular tissue and sparing the islands of Langerhans. Diabetes results only when the lesion is far advanced.

Accompanying the so-called atrophic or Laennec's cirrhosis of the liver, the pancreas is at times the seat of a diffuse chronic inflammation characterized by diffuse proliferation of the interacinar tissue which invades the islands of Langerhans. A similar lesion accompanies hyaline degeneration of the islands of Langerhans and the condition known as hemochromatosis.

Interacinar pancreatitis is usually accompanied by diabetes mellitus. When diabetes is absent the lesion is of such slight intensity that the islands are little implicated.

Klippel and Lefas (*Revue de Médecine,* Jan. 10, 1903) report 8 cases illustrating the bonds which unite the pathology of the liver to that of the pancreas. In cases of hepatic cirrhosis there is often also a sclerosis of the pancreas. The sclerosis is usually intralobular, sometimes perilobular. The islands of Langerhans are more resistant to this process than the true secretory tissue.

The lesion of the pancreas is not the result of that of the liver. The disease attacks primarily and synchronously the liver, the gastro-intestinal glands, the spleen and the pancreas.

Herter and Wakeman (Trans. Ass'n Amer. Phys., Vol. XVII, 1902) report as a result of intraperitoneal injections of adrenalin, sugar was constantly found in the urine. This raised the question: *Is this due to the action of adrenalin on the pancreas locally?*

The pancreas (in dogs) was exposed and the pancreas painted with adrenalin. Glycosuria was as a result constantly produced. A similar amount of adrenalin applied to other organs including the liver and spleen gave no glycosuria, or, at most, a trivial one. When the pancreas was painted, the glycosuria appeared in from ten to sixty minutes, the amount of sugar varying from 4 to 14 per cent.

This action of adrenalin is *not* due to its vasomotor influence because (1) after application there is usually a congestion of the pancreas (not a constriction of the blood-vessels). (2) Other substances which cause congestion of the pancreas do not cause glycosuria. (3) Vasoconstriction produced with cocaine does not cause glycosuria. (4) If enough nitroglycerin be given (at the same time as the "painting" with adrenalin) to keep blood pressure below normal, glycosuria is still produced.

In poisoning with hydrocyanic acid, the blood is found to contain less CO_2 and more oxygen than normally so that the venous blood becomes arterial in color. The patient dies of asphyxia, but Geppert has shown that the disturbance in gas exchange is due to the effect of HCN on the cell protoplasm, *i.e.,* the cells cannot take up the oxygen of the blood.

Herter painted the pancreas with dilute solutions of KCN and glycosurias were constantly produced. KCN injected intravenously and into the intestinal wall does not produce glycosuria. He argues the glycosuria is due to the local effect of the KCN on the cells of the pancreas.

Herter then painted the pancreas with many different substances, *e.g.,* sulphurous acid, ammon. sulphid, sulphureted hydrogen, illuminating gas, HNO_3, bromine, chlorine, nitrobenzol, sod. salicylate, etc. As a general rule (but with notable exceptions) reducing substances produced glycosuria, oxidizing substances usually do not produce glycosurias. He suggests that adrenalin may produce its effect by its reducing action on the cells of the pancreas. If adrenalin be oxidized outside the body and then be painted on the pancreas it does not produce glycosuria (it also loses its power of raising blood pressure).

Perhaps it inhibits the action of the pancreatic enzyme which normally influences carbohydrate metabolism. Possibly the effect is due to the stimulation of nerve endings in the pancreas. Glycosurias following conditions of asphyxia, CO poisoning, epileptiform seizures, etc., may be due to the effects of poisons on the pancreas.

An attempt was made to determine the effect of adrenalin on the islands of Langerhans (there are more islands in the tail than in the head). The pancreas was cut across transversely. In 15 dogs the head of the pancreas was painted and 15.6 grams of sugar was obtained in the urine. In 15

dogs the tail of the pancreas was painted and 17.25 grams of sugar was obtained in the urine. This is slight evidence in favor of tail (*i.e.,* where most islands are involved) but not sufficient to be conclusive.

Pancreatic Lithiasis.—In the Festschrift, published in honor of Ernest von Leyden's seventieth birthday (Berlin, 1902, Bd. 2), Eichhorst reviews the literature of cases of pancreatic calculi diagnosticated during life and adds a case of his own. The symptoms were very severe epigastric pain and tenderness, slight fever, sugar in the urine (5 to 8 per cent.), enlarged spleen (no malarial organisms found), stomach function normal, no jaundice, neither muscle fibers nor calculi were found in the stools. Patient underwent all sorts of "cures" with no improvement until Eichhorst gave him hypodermatic injections of pilocarpine hydrochloride 0.015 gm., three times a week; the sugar at once disappeared from the urine and the pain departed. The patient was able to put on flesh and resumed his usual occupation, from which his illness had kept him for a long time.

In Trans. Assoc. Am. Phys., 1902, Kinnicutt has collected from the literature 6 cases in which the diagnosis of pancreatic calculus was made during life. He also reports one case of his own. This latter is of particular interest to me, since the patient came to Dr. Janeway in Jan., 1901, presumably suffering from biliary colic. Some calculi were obtained and on analysis I failed to find any evidence of their biliary origin. They contained no bile salts or pigment and no cholesterine, but were composed of carbonates and phosphates of lime. At that time Dr. Janeway made the diagnosis of pancreatic calculus. Dr. Kinnicutt draws attention to the fact that it is difficult to distinguish between pancreatic and biliary calculi, there is nothing diagnostic in the nausea, vomiting, diarrhea character of pain, presence of abnormal quantities of muscle fiber in stools or jaundice. The symptoms helpful in making a diagnosis are the finding of the calculus and its analysis, glycosuria and a deficient splitting of ingested fats into fatty acids and soaps; of course, combined with some of the above symptoms.

Deficiency in the *absorption* of fat may be due to jaundice, *i.e.*, the absence of bile from the intestine (in Dr. Kinnicutt's case the *absorption* of fat was normal). Deficiency in the *splitting up of fat* is due to occlusion of the pancreatic duct (*i.e.,* diminution in the pancreatic juice in the intestine). Seventy-five per cent. of the fat in stools should appear as fatty acids and soaps, only 25 per cent. as neutral fat. In Dr. Kinnicutt's case the stools contained 42 per cent. of neutral fat. At times there was jaundice.

Moynihan (*Lancet,* Aug. 9, 1902) discusses pancreatic calculi, their history, symptoms, diagnosis and treatment. He reports a case upon which he made the diagnosis: Woman, fifty-seven years of age; epigastric colicky pains, slight jaundice, loss of weight, pigmentation of the skin, frothy and greasy stools. Examination under chloroform revealed an indefinite swelling above the unbilicus extending a little to both sides of the median line. Diagnosis of pancreatic calculus was made and he operated. The gall-bladder was found distended but it and the bile ducts were free from adhesions. The pancreas was enlarged. A small calculus was found in the duct at its entrance into the duodenum, and delivered through the duodenum. The patient made an uneventful recovery.

Diagnosis.—In *American Medicine* (March 1, 1902) Thayer gives us an able and condensed résumé of the aids to diagnosis in diseases of the pancreas:

1. *Criteria for Recognizing Gross Anatomical Changes.*—Palpation of tumors in the pancreatic region, not moving with respiration and not extending with the flank like the kidney.

2. *Disturbance of Function* indicated by glycosuria, increased fat in stools (particularly the relative increase in the amount of unsplit fat), undigested muscle fiber in stools (use of Sahli's glutoid capsules). In general the constant loss of weight consequent on the inability to digest food as shown by the stools.

3. *Features of Various Forms of Disease.*—*Acute Pancreatitis* should be more than a guess. Injury or some cause of irritation, like calculus, etc. Intense sudden epigastric pain; collapse; very little temperature; cyanosis; demonstration of the fat-splitting ferment in the urine; a palpable tumor; often too great tenderness to make this out.

Chronic Interstitial Pancreatitis.—To be suspected (1) when glycosuria develops in an individual with chronic cholelithiasis; (2) in cases of glycosuria with cirrhosis of the liver; (3) in glycosuria in the course of hemochromatosis; (4) in glycosuria following attacks suggestive of pancreatic colic.

Pancreatic Lithiasis positively identified only when calculi are found in the stools.

Cysts recognized by their consistence and location.

Primary Cancer may be suspected when there exists obstruction; jaundice with distended gall-bladder and rapidly developing cachexia in association with little or no hepatic enlargement.

The importance of the recognition of pancreatic disease is emphasized by the success recently reported as following operative procedure. Nash (*Lancet,* Nov. 1, 1902) reports a case of pancreatitis and fat necrosis with cholelithiasis and glycosuria on which he operated successfully.

Owen (*Brit. Med. Journal,* Oct. 25, 1902) reports 2 cases of chronic pancreatitis in which recovery followed exploratory laparotomies. Batchelor (Medical News, Aug. 9, 1902) reports a case of hemorrhagic pancreatitis and fat necrosis cured by laparotomy and drainage. A similar case is reported by Murray (*Annals of Surgery,* Oct., 1902).

Of 22 cases of calculi embedded in the head, or impacted in the duct of the pancreas and removed by operative procedure only one ended fatally.

Park (*American Medicine*, Feb. 15, 1902) reviews the surgical treatment of injuries and diseases of the pancreas and advises such procedure with certain limitations in traumatism; prolapse; malignant disease; cysts; calculi; acute, subacute and chronic pancreatitis and tuberculosis.

Franke (*Archiv für klin. Med.*, 1901, Vol. 64, No. 2) reports 4 cases of cancer of the pancreas, with total extirpation, death occurred in all cases but not (according to his claim) as the result of removal of the pancreas. The causes of death were hemorrhage, infection, gastric metastases and heart failure. Glycosuria occurred in one case but lasted only two weeks.

Robson and Moynihan, in a recent work (Diseases of the Pancreas and Their Surgical Treatment, London and Philadelphia, 1902) discuss fully the surgical treatment; they advise the administration of the chloride of calcium in 2 to 4 gram doses before and following the operation, to correct the hemorrhagic tendency.

The hypodermatic use of pilocarpine in pancreatic calculi as used by Eichhorst has already been referred to.

Macquaire (*La Presse Médicale*, Sept. 21, 1901, No. 76) claims, as a result of experiments on rabbits, that glycosuria is a result of an alteration or a suppression of the pancreatic secretion. In the absence of pancreatic secretion he recommends the administration of pancreatin 45 to 120 grains a day.

The treatment of the fatty stools of pancreatic disease is discussed by Solomon (*Berlin klin. Woch.*, 1902, Vol. XXXIX, p. 45). Von Noorden has found that the administration of commercial preparations of pancreatin, in such cases, was of little value. Fresh pancreas is of more service. Solomon reports 2 cases of fatty stools, diarrhea and glycosuria due to pancreatic disease. Patients were put upon a diet in which the fat and nitrogen were carefully estimated, after a period of observation fresh pancreas was administered, the absorption of fat and albuminoids was greatly increased and the symptoms disappeared. Several commercial preparations were tried with but little satisfaction. Pankreon (pancreatin and 10 per cent. tannin) had a good effect and since it is not attacked by the gastric juice does not need to be given in glutoid capsules.

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THE OBSTETRIC SIGNIFICANCE OF RETRODISPLACEMENTS OF THE UTERUS.*

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In the treatment of this subject, it is convenient and almost necessary to consider the retrodisplacements of the uterus together. The differentiation between retroflexion and retroversion is obstetrically of no importance since the symptoms they manifest and the complications they evoke are identical. In fact, many of the retroflexed pregnant uteri we encounter are derived from a pre-existing retroversion while some observers, like Martin, regard this as the rule; but this view is not entirely correct.

Posterior displacements of the uterus are of frequent occurrence. In public and private practice, their average is about the same, a little less than 20 per cent. Thus, out of 5,000 consecutive cases seen by me at the Mount Sinai Hospital Dispensary, 925 presented uterine retrodisplacements, not including posterior reposition of the anteflexed uterus. Of these, over 180 patients were pregnant, 30 were miscarrying or had already aborted, and the remainder were suffering from symptoms characteristic of the condition. We are concerned, however, only with the symptoms and complications which sterility and pregnancy produce in these dislocations of the uterus and shall therefore not enter upon a discussion of the etiology of the retrodisplacements except as they bear upon the immediate subject in hand.

Sterility.—Sterility on the part of the woman with a retroflexion or retroversion is a symptom which often brings her to the specialist. The sterility in these cases is, however, purely a relative one, not an absolute one, since the correction of the deformity—in the absence of other serious causes—will usually result in relief. The displacement may be virginal, that is, not a result of former labors, as it often is in multiparous women. It is then usually congenital, a condition which may be referred to developmental anomalies, and, as Küstner has pointed out, this defect is usually accompanied by a failure of the ovaries to descend. Freund's observation that congenital backward dislocation of the uterus is often combined with an abnormally deep pouch of Douglas, is also of worth in reaching a conclusion that the condition is congenital rather than acquired. In these cases, the round and the ovarian ligaments, which are responsible for the normal descent of the ovary into the pelvis, are likewise responsible for the failure of the uterus to be brought forward normally and to be left in a position of retroversion or retroflexion.

Despite the skepticism of some German observers—Strassman* particularly—as to the possibility of a retroflexion arising from trauma, the fact is unquestioned that this condition may arise from injuries during childbirth, from excessive or unusual exercise, or from the involvement of the sacro-uterine ligaments, as Schultze long ago averred. Young women who exercise violently in a gymnasium, or who are obliged to perform arduous and long work, such as washing, sewing on the machine, etc., can certainly acquire retroflexion of the uterus, as every clinical observer has had occasion to demonstrate to his satisfaction again and again. Bicycling to excess is also productive of this condition, as I have had occasion to observe many times, in both public and private practice.

*Read by invitation before the Fourth District Branch of the New York State Medical Association, June 16, 1903.

* Zeitschrift für Geburtshülfe und Gynakologie, Vol. 47, p. 348.

The puerperal infections involving the sacro-uterine ligaments, surrounding them with adhesions as in a posterior parametritis, are responsible also for the causation of retrodisplacements. One sees most exquisite examples of this provoking cause in some cases, the sacro-uterine ligaments standing out like whip-cords in the posterior fornix.

Whatever the exciting cause, the existence of a retroflexion or retroversion is a powerful cause of sterility. The position of the cervix is markedly changed from the normal, lying against, beneath or behind the cervix, and the chances of conception are decidedly diminished. In the lesser degrees of displacement, however, the cervix is still subject to the entrance of the impregnating fluid and it is practically only in cases of retroversion of the third degree that absolute sterility is the rule.

Yet while the vicious position of the cervix is the principal cause of the continued sterility, it is not the sole one. The long continuance of the displacement, with the congestion of the uterus due to the twisting of the broad ligaments with their contained blood-vessels, causes an eventual chronic hyperplastic endometritis; and the longer the displacement continues, the more intense becomes the anatomical change in the endometrium and the less the chance of a successful fruition of intercourse. A vicious circle is formed which only a timely intervention can destroy.

Yet, despite the apparent difficulties to conception which a retroversion or reflexion causes, not infrequently women suffering from this condition become pregnant. Many of them come to the physician too late for assistance, but if they appear before the end of the third month when the uterus is making efforts to rise out of the pelvis, the pregnancy will in most instances be enabled to terminate normally. The fact of usual abortion in retroplaced gravid uteri has been questioned by many writers, and Martin goes so far as to say that the great majority of uteri so placed rise spontaneously out of the pelvis. This dictum may be safely doubted, even though it emanates from an authoritative source. Out of 212 successive incomplete abortions seen in dispensary practice, 169 were in women with retroplaced uteri, a trifle over 75 per cent. Sometimes the uterus does recover its normal position, but it is neither wise nor safe in practice to take the chance of its doing so. The majority of such uteri abort their contents and lead in this way again to a relative sterility if the condition is not corrected.

This fact must be borne in mind, that very often when an examination reveals a posteriorly displaced uterus ontaining a pregnancy, that it was originally an anteriorly or normally placed uterus which became the seat of the pregnancy and that only subsequent to conception did the uterus fall backward. This event is more frequent in multiparæ than in primiparæ, especially in those patients in whom the round ligaments did not become properly subinvoluted after a previous pregnancy, and have remained lax. The increased weight of the newly pregnant uterus—especially if the impregnated ovule rests in the fundus or on the posterior wall, is sufficient to cause it to fall backward. It is only in this way that it is conceivable that as many women with a retroflexion or a retroversion become pregnant as do, for it must be evident that with the cervix pointing upward behind the symphysis, impregnation is almost impossible. Yet, since the fact remains that many pregnancies do so occur, it is equally evident that retroversions and retroflexions—especially of the first and second degrees—are but relative causes of sterility.

Typical instances of sterility due to this cause are found in the following brief histories:

Case I.—Movable Retroflexion in a Multipara; Sterility due to Retroflexion; Alexander's Operation; Subsequent Pregnancy.—Mrs. F. S., twenty-five years old. Has had one child two and a half years ago. Six months later complained of backache, bearing down feeling and leucorrhea. The uterus was found retroflexed to the third degree and an endometritis was present. Operation was refused at this time. The condition continued for another year and as the patient did not become pregnant, she finally consented to be operated upon in April, 1900, when an Alexander's operation and a curetting were performed. In April, 1901 the patient was delivered of her second child.

Case II.—Congenital Retroflexion of the Uterus; Endometritis; Relative Sterility; Pessary; Subsequent Pregnancy.—Mrs. F. O., twenty-six years of age, married four years, no children. Uterus found congenitally retroflexed, the pouch of Douglas being very deep. An endometritis was present and the uterus was freely movable. A Hodge pessary was inserted after elevating the uterus in May, 1902. In March, 1903, the patient was delivered of her first child.

Treatment.—To cure a sterility the cause of which is a posterior displacement of the uterus—and it is only in this sense that we will discuss it—involves a cure of the displacement. Notwithstanding the assertions of many writers, a permanent cure can often be brought about by the wearing of a pessary for from three to four months, or for a somewhat longer period. A congenitally displaced uterus can usually be lifted up unless the sacro-uterine ligaments are too short, when they may be incised through the posterior fornix. If a parametritis has invaded the ligaments or the cul-de-sac of Douglas, massage and treatment with the colpeurynter filled with mercury (Pincus's method), will gradually lead to its absorption. The uterus may then be raised to its normal position and a pessary inserted. If there is a discharge, douches may be given, especially at the time immediately following the menses. From time to time, if the pessary gives no discomfort otherwise, it may be removed to be cleaned. After it has been worn for four months, it may be tentatively removed. If no symptoms recur and the uterus remains in position, preg-

nancy is likely to follow and the retrodisplacement is likely not to return. If it again falls backward, however, on the removal of the pessary, Alexander's operation is to be performed, at once the best, the safest and the most perfect operation for the relief of the retroplaced uterus. An existing endometritis will yield to local treatment, or a curetting may be done, or it will sometimes spontaneously disappear after the uterus has been in its normal position for some time. If there are complicating lacerations of the pelvic floor, these must be simultaneously corrected by operation.

The general principles involved in curing a sterility dependent upon a retroversion or a retroflexion are those leading to a correction of the uterine deformity and of the complications which cause or which result from the displacement.

Pregnancy.—A retroplaced uterus which is pregnant will not usually permit its bearer to go long without the production of symptoms which lead her to consult her physician. There is first noticed painful urination which is due to the tugging on the anterior wall of the vagina and the consequent compression of the urethra which forms such an integral part of it. Constipation will also be noticed by the patient. She may not be actually constipated but the pressure of the fundus on the rectum may give rise to tenesmus which will only be augmented by the pressure and straining the patient exerts. As the pregnancy advances, these symptoms will become exaggerated and will be combined with a feeling of fulness in the pelvis. Some pelvic pain will be complained of, probably due to a stretching of the peritoneum between the uterus and the bladder. Possibly slight bleeding will be noticed about this time. Uterine contractions will eventually set in, and if relief is not offered, spontaneous abortion will take place. If this does not occur, however, it is possible for the uterus even yet to reduce itself and we sometimes observe attempts at reduction which, while not complete, permit the pregnancy to proceed to a normal end. This is the so-called sacculation of the uterus in which the anterior wall of the uterus becomes hypertrophied, the fetus rises out of the pelvis and what corresponds to the posterior wall of the uterus remains below the promontory. The following case is an example of this condition:

Case III.—Sacculation of Gravid Retroflexed Uterus; Reposition of Posterior Portion; Normal Delivery.—Mrs. R. K., seen at the Mt. Sinai Hospital Dispensary, June 8, 1902. She has had three children and two miscarriages. Last menses, January 8, 1902. She has had some abdominal pain since April and some slight bleeding at irregular intervals. She complains of frequent urination and of constipation. The examination revealed a very much relaxed abdomen, a right movable kidney, a lacerated perineum, a cystocele and rectocele. The urethra was reddened and slightly prolapsed. The cervix points straight into the vaginal outlet, the uterus is felt in the abdomen and continuous with it is a mass extending downward into Douglas' culde-sac. The uterus was of the size of a four months' pregnancy. It was at first thought that we had to deal with a myoma of the uterus complicating pregnancy but a subsequent examination revealed the true nature of the case, that of a pregnant sacculated uterus which had originally been a retroflected gravid uterus whose anterior wall had permitted the fetus to rise out of the pelvis. Reposition of the dislocated part of the uterus was attempted and was finally successful with the patient in the knee-chest position. She was kept under observation and was easily delivered by a midwife, on Nov. 5, without difficulty.

If sacculation does not occur, as a rule, abortion takes place or the uterus may become incarcerated. The outcome of an incarceration may be most grave, resulting in gangrene of vagina and rectum and even in the death of the mother. My experience with this complication is limited, but the citation of a few cases of abortion due to retroflexion will make this kind of accident clear.

Case IV.—Movable Congenital Retroflexion; Repeated Abortion; Pessary; Subsequent Pregnancy to Term.—Mrs. M. L., twenty-four years of age, referred to me by Dr. H. J. Wolf. First seen in July, 1897, when the patient was aborting with a retroflexed uterus. In December of the same year, the same accident occurred and the patient required a curetting. I advised her, with Dr. Wolf's consent, to come to me as soon as she again thought herself pregnant. This she did in April, 1898, when she was six weeks pregnant. The uterus was retroflexed but was easily lifted up with the fingers. A Hodge pessary was inserted and left in place until the fourth month of her pregnancy, the uterus remaining in good position. She was easily delivered on Dec. 6, 1898.

Case V.—Movable Retroverted Gravid Uterus; Abortion; Pessary; Subsequent Pregnancy to Term.—Mrs. M. D. B., twenty-two years of age. Had one child one and a half years ago. Her first pregnancy was uneventful but delivery was accomplished by forceps. First seen on Dec. 4, 1900. She had then been bleeding for thirty-six hours after a menstrual cessation of two months. The hemorrhage was very profuse. The fundus was lying below the sacral promontory and the cervix was behind the symphysis—a retroversion. The patient was immediately curetted. On March 20, 1901, she presented herself again, pregnant about six weeks. The uterus was in the same position as before. A Hodge pessary was introduced and kept in place until the fourth month of pregnancy. The patient went through her pregnancy with no further difficulty. She was delivered on Nov. 8, 1901.

Clinical histories of this character could be multiplied and must be common in the practice of every physician. Abortion will occur, as I have tried to make evident, only if the proper diagnosis has not been made and the proper care has

not been taken of the patient. As a rule, at the present day, the pregnant woman consults her prospective accoucheur early in her pregnancy, the laity being very well educated up to the fact that prophylaxis is carried to its highest point of efficiency in the care and hygiene of pregnant women. Nevertheless, the patient may not present herself early or the physician may not examine her until threatening or dangerous symptoms have arisen. It is these cases which lead to the subsequent development of the complications which I have narrated. When a pregnant woman consults her physician, his first duty is to make a thorough pelvic examination for the establishment of many points—the fact of pregnancy, the capacity of the pelvis and the position of the uterus, among other things. If the uterus is then found in a position of retroversion or retroflexion, it must be lifted out of the pelvic cavity, as described later, and a pessary inserted until the time has passed when it can again fall behind the promontory of the sacrum. It will have attained this size in from three and a half to four months of pregnancy. If this is done, many a case which would otherwise proceed to a spontaneous abortion will go on to a successful termination of the pregnancy. Good examples of this form of prophylaxis are the following cases:

Case VI.—Movable Retroflexion; Pregnancy; Pessary; no Abortion; Pregnancy to Term.—Mrs. E. C. M., referred to me by the late Dr. Mundé. Has had one child, delivered by forceps. Six months ago was operated for lacerated cervix and perineum by Dr. Mundé. Now complains of painful urination and defecation. Last menses eight weeks ago. The uterus was found pregnant about six weeks, freely movable and retroflexed. It was easily reduced and a Hodge pessary inserted. The symptoms disappeared almost at once. The pessary was removed when the patient was four months pregnant and the pregnancy went on undisturbed to its normal end.

Case VII.—Movable Retroflexion; Pregnancy; Pessary; no Abortion; Pregnancy to Term.—Mrs. A. M. B., twenty-four years of age. Referred to me by Dr. J. Brettauer, April 1, 1902. The patient was a primipara and had seen her last menses on Jan. 10, 1902. She complained of frequent and painful menstruation and of severe constipation and pain in the rectum. She was found to be two and a half months pregnant and the uterus, while freely movable was sharply retroflexed. Raising the uterus and the insertion of a pessary relieved the symptoms at once. The patient was delivered on Oct. 17, 1902, with no further disturbance during her pregnancy.

Treatment.—The treatment of a uterus which is retroverted or retroflexed and which is the seat of a pregnancy, consists primarily of placing the uterus in a normal position and secondarily of keeping it there.

The manner of raising the uterus out of the pelvis is of importance. In the first place, the bladder and the rectum must be empty. After this has been accomplished it will be an easy task, in the vast majority of instances, to lift the uterus by pushing the cervix back into the hollow of the pelvis, simultaneously pushing up the fundus from below. With the outside hand, the fundus is then caught through the abdominal wall and moved forward. The introduction of a well-fitting pessary will complete the maneuver.

This method will not always be possible, however. The pushing back of the cervix will be prevented by extreme flexion, or the fundus will be found not to rise out of the pelvis. The difficulties may then sometimes be overcome by placing the patient in the knee-chest posture and making direct pressure forward with the fingers over the fundus. A reduction will then almost always be possible unless the uterus is firmly fixed by adhesions. Another and equally efficacious method is that of Küstner, by which the cervix is grasped by bullet forceps with the fingers of one hand inserted behind the fundus. While the cervix is carried downward and backward, the fundus is pushed upward until it has passed the sacral promontory, when it is grasped by the hand and held in position until a pessary is introduced.

Neither of these methods will avail, however, when the uterus is incarcerated, that is, when it is impossible to cause it to rise easily out of the pelvis by spontaneous or artificial means, or when it gives rise to threatening or dangerous symptoms. In these cases, the use of the colpeurynter, as originally advised by Scanzoni and again recently advocated by Albert,* is often of use. An ordinary Braun's colpeurynter or a Champetier-de-Ribes' bag of medium size, is introduced into the vagina folded on itself, between the pelvic floor and the uterus. It is gradually filled with sterile water, or, as Funke has suggested, with mercury, and is left in place for from two to ten hours. The uterus softens and in an incredibly short time will often rise out of the pelvis. If it large enough to remain there without further support no pessary need be used. If it is not, a pessary must be used. This is certainly a less violent method than manual reposition and has the possible advantage of offering a safer prognosis on this account.

It must be remembered that if any of these procedures are very painful, anesthesia may be employed and is not infrequently necessary. The further caution must also be expressed that under no circumstances or conditions, must the uterine sound be introduced into the pregnant uterus.

The subsequent treatment of these cases has elements to which we must give attention. The patient must be instructed to lie on her abdomen for from one to two hours daily, to lift no heavy objects, to avoid violent forms of exercise, such as bicycling, sea bathing and the use of the sewing-machine, and to eschew any exercise beyond the point of fatigue. Her bowels must be moved daily and she must be instructed to empty her bladder as soon as the normal desire to do so appears. As to douches, while the pessary is being worn, there is some difference of opinion.

* Munchener medizinische Wochenschrift, March 24, 1903, p. 499.

Astringents are absolutely to be withheld for they may cause cervical contractions which will result in abortion by stimulating uterine contraction. Douches of plain water tend to make the vaginal mucosa spongy and dry and to induce a vaginitis. In general it may be said that if there is no vaginal discharge, no douches are necessary; if there is, the employment of a weak salicylic acid solution or of a thirty-per-cent. soda solution, or of an ordinary salt solution, will be sufficient for cleansing purposes.

Poorly polished pessaries soon lose their gloss and irritate the vagina and must be replaced by new ones when the vagina shows signs of irritation. A pessary which is too large likewise irritates the posterior vaginal wall and must also be replaced by a better fitting one.

As to the choice of a pessary, I have always employed the Hodge-Smith hard-rubber variety and have been perfectly satisfied with it. Its posterior end can be softened in boiling water and bent and adjusted to suit the necessities of any case. It acts, as is well-known, by supporting the posterior fornix and thus keeping the sacro-uterine ligaments on the stretch.

The presence of an inflammatory process in the parametria is a contraindication to the use of a pessary, but the normal congestion due to pregnancy will often bring about an absorption or softening of the adhesions holding the uterus backward and it may spontaneously assume its normal position or it may yield to repeated gentle efforts at reposition.

The main elements to be borne in mind in the treatment of retrodeviations of the gravid uterus may be summed up as: (1) Reposition of the uterus; (2) the employment of absolutely no force in reposition; (3) the use of a well-fitting pessary; (4) the use of douches only when necessary; (5) the assumption of the prone position by the patient for a few hours each day; (6) the excretory functions must be properly attended to; (7) the re-examination of the patient from time to time to assure oneself of the proper position of the uterus and of the suitability of the pessary; (8) the removal of the pessary after the beginning of the fourth month of pregnancy.

Puerperal Retroflexion and Retroversion.—By this term I shall refer to those cases in which a retrodisplacement arises during the first two weeks after labor, although it may be said with truth that the majority of such deviations are the sequel of childbirth. The principal causes leading to this phenomenon are muscular exercise during the first few days following birth, too long a maintenance of the dorsal position, overdistention of the bladder, extensive lacerations of the pelvic floor and atony of the uterine walls.

Foremost among these I would place keeping the patient too long on her back. It is only a faulty conduct of the puerperium which will permit the patient to remain solely in this position, for her well-being and her subsequent health are fostered by the side position or by having her lie on the abdomen for a few hours daily. For years the German obstetricians have been teaching the truths of this assertion and Edgar has preached it in this country; and yet, judging from the cases seen in consultation and in public practice, it is taking a long time for the wholesomeness of this fact to permeate the profession.

As to the other evoking causes of what we may call "acute retroversion or retroflexion," the overdistention of the bladder is, in my experience, the next most common. Imperfect or no repair of a badly lacerated perineum, and the toilet of the baby by a woman three or four days post-partum, are causes not infrequently leading to the same end.

The symptoms will usually be those of a sepsis, for when the uterus becomes retroplaced within the first two weeks of the puerperium, there is bound to be a retention of the lochia with their consequent decomposition. The character of the sepsis will depend upon the kind and virulence of the infection. The symptoms will be the same if a retained or partially retained placenta is the cause of the posterior displacement. Pressure upon the rectum with tenesmus, urinary retention with a possible cystitis, dragging pain in the pelvis with a sense of fulness there, will be the symptoms accompanying the varied picture of the sepsis. The temperature may rise as high as 106° F., and may or may not be preceded by a chill. The patient will give every appearance of a gravely ill person but the change after the institution of appropriate treatment will be a striking one.

The diagnosis is easy. The examining finger will come upon the large soft mass in Douglas' cul-de-sac, and the position of the cervix and the absence of the fundus above will make the condition clear at once.

A very instructive case of this character is one recently seen in consultation:

Case VIII.—Acute Retroflexion in the Puerperium; Sapremia; Uterus reduced and Washed Out; Recovery.—Mrs. G. W., confined by forceps without any laceration eight days ago. For three days has had chills and fever two or three times daily. Rectal and vesical tenesmus extreme; temperature 104.5° F., pulse, 140. The patient had sat up in bed on the fourth day post-partum and had thereafter washed her baby daily. She had felt something give way and had pain and tenesmus since. Examination revealed a very sharply retroflexed uterus. There had been no lochia for four days, so that the examining finger had no odor upon it. Reposition without narcosis was too painful, so that chloroform was given, the uterus placed in proper position, and enormous quantities of very fetid discharge were washed out of the uterus, representing putrid lochiæ. A large pessary was inserted which easily kept the uterus in place. Recovery was uneventful.

Treatment.—Prophylaxis is the best treatment and consists in compelling the patient after the fifth day post-partum to lie on her abdomen daily for from one to two hours, or if she cannot do

this, she should at least be made to lie on her side for an equal length of time.

If a retrodisplacement cannot be averted, the uterus must be lifted up and washed free from its putrid contents; if placental remnants are present these can be removed with the blunt curette or with the finger. The uterus is then to be kept in position with a large pessary which must be later exchanged for a smaller one. The bowels and bladder must receive careful attention and the patient be compelled to lie on her abdomen for a few hours daily.

The important thing is the prophylaxis, and I shall feel well repaid for my labor if I have sufficiently impressed upon you the desirability of not allowing puerperal women to remain too long in the dorsal position. It will save many of them acute and even chronic pelvic disease.

136 West Eighty-fifth Street.

MEDICAL PROGRESS.

MEDICINE.

Estimating the Strength of Digitalis Leaves.—There is as yet no simple, accurate way of testing the strength of digitalis and its preparations, except by physiological experiment. But even this is very unreliable, according to the experiments of H. F. Moschkowitsch (Arch. d. Pharm., Vol. 241, No. 5). When a number of frogs of the same variety and size were poisoned with digitoxin, the fluid extract or the infusion, the time required to bring on cessation of the hearts' action stood in no relation to the dose given, and even with the same dose there were marked variations with different animals. Pharmaceutical preparations of digitalis are, relatively, more toxic than digitoxin, since the latter is insoluble, and absorbed with difficulty, and since the leaves also contain other poisonous principles such as digitalin and potassium salts. Roughly speaking, the amount of extract corresponding to 0.01 gram (1-6 grain) of the leaves, should kill a frog weighing 35 to 40 grams (1 1-6 to 1 1-3 oz.) within an hour.

Acetonic Vomiting and Tuberculous Meningitis.—The syndrome described by Marfan, consisting in uncontrollable vomiting and acetonuria, is not always benign, for it may mark the onset of a tuberculous meningitis, as shown by the case reported by Leignen and Mirallié (Gaz. Méd. de Nantes, Aug. 15, 1903). The patient, a child of nine years, came under treatment for uncontrollable emesis; all nourishment taken being at once vomited. The breath had a decided odor of acetone and examination revealed its presence in considerable quantity in the urine. This condition persisted for nine days, no nervous symptoms being apparent during that time and the temperature ranging between 100 and 101° F. Upon the tenth day a slight inequality of the pupils was seen; and upon the thirteenth the child complained of headache. On the fifteenth day Kernig's sign appeared and well-marked symptoms of meningitis rapidly developed; the patient succumbing to that disease three weeks after the onset of acetonic vomiting.

Strychnine in Polyuria.—An interesting report is published by L. Feilchenfeld (Deut. med. Woch., Vol. 29, No. 31) of two severe cases of polyuria, where a marked reduction in the amount of urine was effected by the injection of strychnine. He gave daily .005 gm. to one case of polyuria and to one of diabetes insipidus. In each instance the urine dropped from 3,200 gm. to 1,400 gm., daily. There was apparently no change in the specific gravity, and the author believes that the prompt response was due to the action of the drug on the central nervous system.

The Blood in Rheumatoid Arthritis and Osteoarthritis.—It has generally been believed that anemia was characteristic of these diseases and the recent investigations of W. G. Erving (Am. Med., Sept. 12, 1903), which are based on actual blood counts, are therefore of especial interest. For, strangely enough, the condition of the blood was not such as would be expected in diseases of a general wasting character. The author's observations were made on a series of 40 cases, during the acute symptoms, marking the onset or during acute exacerbations. The figures show that in both classes of cases the red cells ranged slightly above the normal, while the hemoglobin percentage was close to the 100 mark. This occurred not only in robust men with the acute symptoms of few weeks standing, but also in the old cases with general rheumatoid arthritic involvement. The slight leucocytosis noted in the majority of the cases, seems to bear no relation to the severity of the symptoms or to the duration of the disease. No abnormal elements such as microcytes, macrocytes, nucleated red cells, or other signs of hemic degeneration, were found, and in the acute stages of the disease the formed elements of the blood were practically unaffected. The author does not attempt to explain these apparent discrepancies between clinical appearances and microscopical findings.

Autolysis in Pneumonia.—Believing that the failure of the exudate to undergo absorption in a case of unresolved pneumonia might lie in an imperfection of the autolytic processes taking place in the inflamed lung, S. Flexner (Univ. Penn. Med. Bull., Vol 16, Nos. 5 and 6), has made a thorough study of autolysis of the lung in pneumonia. That organs protected from decomposition tend to undergo solution by a process of self-digestion was first shown by Salkowsky in 1882, and it is now known that in the intracellular ferments causing autolysis we possess a very potent series of agents which come into play under both physiological and pathological conditions. From the study of a large number of lungs obtained at autopsy the writer has found that it is in the stage of gray hepatization that autolysis takes place quickly and perfectly, while in the stage of red hepatization it is very imperfect. He attributes this to the small number of pus cells present in the latter condition. But if the lung in unresolved pneumonia is exposed to conditions favoring autolysis, the process is slow and incomplete compared with what takes place in gray hepatization. In unresolved pneumonia the absence of reduction of autolysis is an indication of the future fate of the exudate, namely, during life to undergo organization. The exudate in unresolved pneumonia is fibrinous rather than cellular, and many of the alveoli are filled with dense, hyaline, fibrinous masses. This condition is viewed by the author as an acute lobar pneumonia, in which the inflammatory exudate, either because of some disproportion between the leucocytes and other constituents, or other causes, as yet unknown, failing to autolyze perfectly, cannot be absorbed, and hence undergoes organization.

Subcutaneous Emphysema from Rupture of a Tubercle.—A child of eight years, with Pott's disease, in the service of P. Guhlaume-Louis (Arch. Gén. de Méd., Aug. 18, 1903), began to cry out, became excited, and complained of severe headache. This was followed by stiffness of the neck, photophobia and obstinate constipation, and the diagnosis of tuberculous meningitis was made. Suddenly respiration became labored, Cheyne-Stokes, the eyelids and cheeks swelled

up, and the eyeballs protruded. This edema gave a fine crepitation and was evidently subcutaneous emphysema. Soon both sides of the neck and the upper part of the chest were involved and the patient was comatose. She rallied somewhat for a time, but the emphysema progressed, and death took place after ten days. At the post mortem the lungs are free from adhesions, there is no pneumothorax, but one is struck by the appearance of many small bullæ in the subpleural cellular tissue. The mediastinal tissue is crepitant on pressure. In the middle third of the anterior border of the middle lobe of the right lung there is a large vesicle filled with air, and surrounded by several tubercles; the whole lung is emphysematous. Evidently there was an intrapulmonary rupture of a subpleural tubercle, without perforation of the pleura. The air penetrated the interlobular tissue, and thence reached the mediastinum, neck, and face. There was no meningitis.

SURGERY.

Diagnosis of Gastric Cancer.—The fact that serum exudes from any cut or ulcerated surface, furnishes a basis for the tests proposed by H. Solomon (Deut. med. Woch., Vol. 29, No. 31) for diagnosing the presence of cancer, by a determination of the presence of albumin in the stomach washings. He prepares the patient for the test by giving fluids only, on the day previous, and these must be free from albumin, such as coffee, wine, tea, etc. In the evening the stomach is washed out clear and nothing more is permitted in the way of food. On the following morning 400 cc. of normal salt solution is poured into the stomach through the tube, syphoned out, poured in a second time and syphoned out again. This fluid is then tested for nitrogen by the Kjehldahl method and the Esbach test for albumin applied. His observations were made on 22 patients, and the results are as follows: The Esbach test was negative in 6 cases of gastric catarrh or only faintly positive. It was entirely negative in 5 cases of nervous dyspepsia, and negative or almost so in other gastric affections. Cancer proved an exception, however, and in 8 cases of this, the Esbach test was well marked, showing the presence of one-sixteenth to one-half per thousand of albumin in every instance. The author believes that a negative reaction may assist in excluding carcinoma in doubtful cases, and that a marked positive reaction may confirm the diagnosis. He also found that the nitrogen was more abundant in the presence of a carcinoma, ranging from 10 to 70 mmg. in 100 cc. of fluid, and thinks that when the fluid shows a flaky turbidity or the nitrogen present is over 20 mg. per 100 cc., the possibility of cancer should be suspected.

Diagnosis of Mammary Cysts.—The different diagnosis of tumors of the breast is an extremely important and oftentimes difficult matter in the early stages when treatment must be instituted if a radical cure for the carcimonatous variety of tumor is to be expected. It is not right, however, to take it for granted that every tumor is malignant, and that the breast must be removed for fear of recurrence or future degenerative changes. The frequency with which simple cystic tumors are met with does not seem to be fully realized. R. Abbe (Med. Rec., Aug. 15, 1903) finds that in his private ward, during the past eight years, he has seen 41 cases of mammary cysts and 56 cases of scirrhus tumors, besides a number of innocent adenomata. In regard to the differential diagnosis he mentions the fact that while the scirrhus tumors are almost always in the upper outer quadrant, cysts may be located in any part of the gland with a slight preponderance only in the upper and outer segment. Thirty-three out of 41 cases of cysts were in patients between forty and fifty years of age. This tendency to fibroid changes occurring during the atrophy of the climacteric has been noted by other observers. The contents of the cysts was usually an opalescent whitish and turbid fluid, the deposit on standing showing a considerable amount of fatty granular matter. The gross characteristics are usually those of a hard tumor in any section of the glands, usually placed rather deeply, never dimpling the skin like a scirrhus one or drawing on the nipple; sometimes quite a flat ovoid, and in the majority of cases, not giving a distinct sense of fluctuation. This deceptive hardness of the cyst makes the diagnosis impossible by palpation, and yet by the simple use of the aspirating needle the nature of the mass can be easily determined. The author strongly advises the use of this harmless method of diagnosis, for frequently a supposedly malignant tumor, which will demand the sacrifice of the breast, may be quickly and easily made to disappear permanently by the use of the aspirating needle and syringe. In only two cases did the cyst refill and in these a second aspiration proved sufficient to secure a permanent cure. The use of this method will frequently prevent a serious mistake in diagnosis and enable the general practitioner to perform a phenomenal cure.

Splenomedullary Leucemia Treated by the Roentgen Ray.—A few months ago two cases of pseudoleucemia were reported by Nicholas Senn as having been successfully treated by the X-ray. They have since continued in excellent health, and now the same author (Med. Rec., Aug. 22, 1903) makes the startling, but very interesting report, that he has been able to cure a patient suffering from splenomedullary leucemia. The physical condition and blood examinations of this patient preclude the possibility of any mistake in diagnosis, as it appears to have been a fairly typical case. The spleen reached nearly to the pubes, and extended two inches beyond the median line. The red blood cells were 3,500,000 in number, the leucocytes, myelocytes and eosinophiles numbered 64,800. During the course of the treatment the X-ray had to be stopped on several occasions, owing to high temperature and other symptoms of intoxication. The blood examinations were repeated and it was noticed that improvement kept pace with the decrease in the size of the spleen. The first decided changes were in the reduction of the myelocytes and eosinophiles, and an increase in the red blood cells. The last examination showed no myelocytes or eosinophiles, and very little poikilocytosis. The spleen, the lower end of the sternum, and the epiphyseal extremities of the long bones were exposed daily to the action of the X-rays for from ten to twenty minutes. It is supposed that this disease is due to some microbic infection which, however, seems very susceptible to the action of the X-rays.

PHYSIOLOGY.

The Physiology of the Bronchial Muscles.—By means of the plethysmographic method, W. E. Dixon and T. G. Brodie (Jour. of Physiol., Vol. 29, No. 2) were able to demonstrate the degree of contraction of the bronchioles by estimating the volume of air passing through them. They find that the bronchoconstrictor fibers run in the vagus; none are found in the sympathetic: there is no central tonic effect. Contraction of the bronchioles may lead to collapse or overdistention of the lung, depending upon the force of the inflation on the one hand, and the time allowed for deflation on the other. In the dog and rabbit, typical bronchiolar constriction immediately follows vagal stimulation. In the cat, the common response is a preliminary slight constriction followed by recovery, and the typical con-

striction only comes on some seconds after the stimulus has ceased. The vagus contains bronchodilator fibers, as well as bronchoconstrictor, and the former are particularly well developed in the cat, thus yielding an explanation of the anomalous result seen in this animal. The sympathetic contains no bronchodilator fibers. The presence of the latter is most readily demonstrated by excitation of the vagus, after an artificial tonus has been set up by muscarine, pilocarpine, etc. The bronchodilatation dies away soon after the stimulus ceases. Both the constrictor and dilator fibers in the vagus supply the lung on the same side only. The inhalation of ether or chloroform for anesthetic purposes abolishes the effect of the vagus on the bronchioles. This is due to the paralysis of the nerve-endings by direct absorption through the mucous membrane. Excitation of the vagus produces a diminution in amount of the blood in the lung. This produces increased distensibility. Reflex bronchiolar constriction is best obtained by exciting the nasal mucous membrane. Little or no result has been obtained by stimulating the sciatic, central vagus, superior laryngeal or cornea. The condition of the bronchioles and any alteration in their contraction can also be determined by recording the rate of distention or of retraction of the lung. Typical bronchiolar contractions by stimulation of the vagus, can be obtained in animals recently killed by bleeding. Some constriction can even be obtained thirty minutes after death. Gradual constriction of bronchioles followed by dilatation is usually seen post-mortem. Muscarine, pilocarpine and physostigmine excite the vagal endings and induce typical bronchiolar constriction. The effect is abolished by atropine. Barium, veratrine, bromine and the salts of many of the heavy metals (*e.g.*, gold) produce constriction which is not influenced by atropine. Inhalation of CO_2 leads to constriction of the bronchioles which is not altogether central in origin. Chloroform, ether, urethane, lobelia and atropine induce dilatation of the bronchioles when constriction is present. The dilatation produced by lobelia is quite transient, while that by atropine is permanent.

The Effects of Animal Extracts.—The subject of the physiological effects of intravascular injections of extracts of animal tissues has not yet been thoroughly threshed out. One is cautioned by S. VINCENT and W. SHEEN (Jour. of Physiol., Vol. 29, No. 3) not to rashly assume that whenever an extract of a tissue introduced artificially into the circulation produces a distinct physiological effect, that the production of a substance or substances with a similar effect is one of the normal functions of the living tissue. They find, in confirmation of the observations of Osborne and Vincent, that extracts of nervous tissues produce a marked temporary fall of the blood-pressure, which occurs after section of both vagi and after doses of atropine sufficient to completely abolish vagus action. Since choline always produces a rise of blood-pressure after atropine administration, it cannot be the active principle of nervous extracts. The depressor substance in nervous tissues is found in physiological saline decoctions, in alcoholic extracts dissolved in normal saline, and in ether extracts (dissolved in normal saline) of the alcoholic extracts. The depressor substance is not, however, extracted direct from the moist tissues by ether. There is distinct evidence of the presence of a second active principle in nervous tissue extracts which produces a pressor effect. This is, indeed, the usual effect of an extract made with normal saline at ordinary temperatures. All kinds of muscular tissue contain a depressor substance, not usually so marked in its effects as that contained in nervous tissues, but, like it, equally active after the administration of atropine. A pressor substance appears also to be present, best extracted by normal saline at ordinary temperatures. There is abundant evidence of pressor and depressor substances in kidney tissue. As with other tissue extracts, the pressor effect is more readily produced by extracts made at ordinary temperatures, but occasionally by saline decoctions. A depressor substance is found in liver, spleen, testis, pancreas, ovary and lung. Other observers have found it in thyroid, thymus, suprarenal and pituitary. With many of these tissues there is evidence, more or less marked, of the presence of pressor substance. A depressor substance is found in extracts made from intestinal mucous membrane and from the whole thickness of the gut. Probably all animal tissues contain different substances which when injected into the circulation produce, respectively, either a rise or a fall of the blood-pressure. The rises and falls of blood-pressure are produced by vasodilatation or vasoconstriction of various vascular areas in the body, but further investigations are required before it can be stated definitely that there is any specific effect of any particular extract upon the tissue from which it arises.

The Nature of the Nerve Impulse.—One is reminded of Matthews' ingenious electrophysical theory of the origin of the nerve current, by the new hypothesis worked out in Copenhagen by A. LEHMANN (Pflüger's Archiv, June 26, 1903). He holds that a living nerve, when thrown into functional activity, behaves in its electrical relations as a series of contiguous concentration chains, which come into play in such a manner that the stimulus occasions a change in concentration and hence arouses an electromotive force.

Genuine Contractility and Motor Innervation of the Capillaries.—Nearly forty years ago, according to E. STEINACH and R. H. KAHN (Pflüger's Archiv, June 26, 1903), Stricker established the fact that the finest ramifications of the vascular system are not of a constant diameter, but are capable of varying their lumen, not as the result of changes in the blood pressure, but as the result of vital changes in their walls. These variations were attributed by Golubew not to a true contractility of the capillary wall, but to the presence or absence of tumefaction of the spindle-cells of the endothelium, the size of the lumen diminishing with the increase in thickness of the capillary wall as the result of this tumefaction. On the other hand, Rouget, and, later, Mayer discovered in the capillary wall many oval spider-like cells which they considered as closely related to the smooth-muscle cells of the arterioles and larger vessels, and to whose contraction they attributed the narrowing of the capillary lumen. In view of these two diametrically opposed hypotheses of the origin of the narrowing of the capillary lumen, Steinach and Kahn were led to investigate whether or not this phenomenon is the expression of a genuine contractility of the capillaries, of the same nature as that possessed by the larger vessels. The results of their researches answered this question in the affirmative. They studied the nictitating and peri-esophageal membranes of the frog and the omentum of kittens and guinea-pigs, and found that when these structures were stimulated by induced electrical shocks, the capillaries, observed under the microscope, responded by means of distinct contractions. There was a diminution not only of the lumen but also of the entire cross-section of the capillary. With maximal stimuli this constriction was so great as to obliterate entirely the lumen. The contraction of the capillary was accomplished by the appearance of longitudinal folds or wrinkles in the endothelium, which were more distinct the greater the contraction and which disappeared upon the dilatation of the capillary. Moreover, the degree of this contractility

was not uniform in all capillaries nor in all portions of the same capillary; certain capillaries and certain parts of an individual capillary contracting in the same way and to the same degree on repeated stimulation, while other capillaries and capillary-districts did not respond at all. These results have only one interpretation, namely, the possession by the capillary of a true contractile power which resides in the branching cells present in its wall, a power capable of causing complete obliteration of the lumen. The latent period of this contraction amounts to from one to three seconds and the dilatation lasts a longer time than the contraction. The interrupted current only is capable of eliciting this phenomenon, single shocks even of great intensity having no effect. In studying the motor innervation of the capillaries, the authors found that on stimulation of the peripheral stump of the cervical sympathetic, genuine capillary contractions resulted, the same as those following direct stimulation of the capillaries themselves. The latent period by indirect as well as by direct stimulation is greater than in the case of the small arteries, an effect which must be attributed to the peculiar physiological properties of the contractile elements of the capillary wall. The authors also discovered in the capillaries the tendency to a rhythmical contraction. In discussing the functional significance of capillary contraction, they find that it is able, when brought about by the nervous mechanism, to aid in the regulation of the vascularity of the organs or of different positions of a single organ, in conjunction with or independent of the smaller arteries. Furthermore the constriction of the capillaries would increase the pressure of the blood contained within them, and thus, by favoring the filtration of the lymph, would promote the nutritive changes in the tissues, and possibly arouse certain chemical processes which would otherwise remain dormant. The secretion of urine and other processes in which variations in filtration-pressure come into play, are to be thought of in connection with the significance of capillary-contraction.

The Nature of Fibrin-ferment.—As the result of a series of investigations it is maintained by C. A. Pekelharing and W. Huiskamp (Hoppe-Seyler's Zeitschrift, July 4, 1903) that the nucleoproteids obtained from the thymus and that of the blood-serum, represent the zymogen from which, with the aid of calcium salts, fibrin-ferment is formed. It is probable that the phosphorized albuminoids obtained from other organic extracts and from milk, which are capable in the presence of calcium, of coagulating fibrinogen, are to be regarded as prothrombines. The knowledge of the influence of these substances on clotting is still incomplete, but it has been established that the action of the enzyme does not consist, as has been maintained, in bringing about the union of calcium with fibrin.

The Relation of Ventricular Systole to Venous Blood Flow.—A new and ingenious theory of the mechanics of venous circulation is propounded by K. Schmid (Pflüger's Archiv, June 26, 1903). The current teaching on this subject is, as summed up by Tigerstedt, that the forces that maintain the venous flow are as follows: (*a*) principally the ventricular contraction; (*b*) accessory forces, namely, (1) aspiration caused by the respiratory movements, (2) the aspiration produced by the diminished size of the heart during systole with the consequent vacuum and (3) the aspiration produced by the diastole of the ventricle. There are a number of facts which, in the author's opinion, militate against the above teaching. In the first place, the decline in the arterial pressure does not cause a decline in the venous pressure, and vice versa, the increase in the arterial pressure as the result of more powerful cardiac action has not accompanying it an increased venous pressure, but on the contrary, a diminished venous pressure. These facts indicate clearly that the pressure of blood in the veins is independent, in the main, of the pressure in the arteries. As regards the influence of the respiratory movements, it must be remembered that they are much less frequent than the cardiac movements, while there is hardly any difference in the circulation between respiration and expiration. Moreover, in the fetus in which the respiratory movements have not yet begun, there can be no negative pressure exerted from this standpoint, yet the circulation of the blood is an extensive and complicated one. Hence the effect of pulmonary aspiration is no important one, which is likewise the case with the systolic diminution of the heart-volume, for puncture of the pericardium does not entail any embarrassment of the venous circulation. In the author's opinion, the heart is not only a force-pump but also a suction-pump, both phases of its activity being manifested during the ventricular systole. The left ventricle exerts a propelling force upon the blood in the systemic arteries and at the same time a suction upon the blood of the pulmonary veins, the right ventricle doing the same as regards the blood in the pulmonary arteries and systemic veins respectively. The apparent paradox involved in the statement is dissipated by the ingenious explanation of the method by which a propelling and a suction force—a *vis a tergo* and a *vis a fronto*—can both be exercised at the same time by the contracting ventricle. During ventricular systole the portion of the heart which undergoes the greatest amount of excursion is not the apex, as has been supposed, but the portion lying at the junction of the auricles and ventricles. There is a shortening of the ventricle in its longitudinal diameter; at the same time the closed flaps of the auriculoventricular valves are drawn down into the ventricle by the contraction of the papillary muscles. The result is that the cavity of the auricle is enlarged during the ventricular systole, a partial vacuum is created within it and a powerful suction-force, therefore, exerted upon the blood in the venous channels opening into it. The impetus given to the venous flow by this means does not cease with the ventricular pause, but by virtue of its own inertia the blood continues to pour into auricle and then into ventricle. Thoroughly corroborating this theory are the facts derived by direct observation, namely, that the flow of blood from the veins into the auricles is strongest during the ventricular systole, while at the same time the pressure in the central veins is the lowest. A fluid can flow only from a place of higher to one of lower pressure, hence during this time the pressure must be still lower in the auricles than it is in the veins. This fact has been experimentally substantiated. What then besides the movement of the ventricle and the valve flaps during its systole can bring about this extreme reduction in auricular pressure? It is hardly possible that the elastic recoil of the thin auricular wall can do this. Therefore it appears that the suction action exerted by the ventricle is no less important and significant for the needs of the circulation than the propelling action. This theory has important practical applications in clinical medicine. As the result of insufficiency of the mitral valve, the suction of the left ventricle upon the pulmonary veins is reduced, and this reduction is compensated for by an increased pressure exerted by the right ventricle, which in the short and uncomplicated pulmonary vascular system is capable of maintaining a circulation comparable to the normal. One baneful result of this is the diminished elasticity of the lungs. In the case of the extensive and com-

plicated systemic circulation the relations are different, for insufficiency of the tricuspid valve is followed by no such perfect compensation. For this reason it is fortunate that tricuspid regurgitation is relatively uncommon. The blood flowing back into the right auricle through the insufficient valve, immediately loses its pressure in the wide-open auricular cavity and hence, instead of there being an increase of pressure in this chamber, there is really a failure of the power of suction normally exerted by the ventricle. At the same time the hypertrophied left ventricle is not adequate to make up for this deficiency on account of the extensiveness and complexity of the systemic circulation. This supports the original hypothesis by showing that the propelling power of the left ventricle, the *vis a tergo,* is not alone capable of maintaining the circulation even though reinforced by the respiratory movements and systolic diminution of the size of the chest-cavity.

The Formation of Dextrose in Metabolism.—With a view to unlocking the mystery of the constitution of the proteid molecule, many careful studies of the decomposition product of proteid digestion have been made. The fact that these cleavage products, such as leucin, lysatinine, histidin, lysin and arginin, each contain the same number of carbon atoms as dextrose led Kossel to suggest that an aggregation of these amido bodies forming proteid may be compared with the polysaccharides, and that the former are the mother substances of the proteid dextrose found in diabetes. A research was undertaken by P. G. Stiles and G. Lusk (Am. Jour. of Physiol., Aug. 1, 1903) in order to determine what amount of dextrose, if any, would be produced after feeding a dog with a digestive mixture of proteid decomposition products. They found that 5 gms. nitrogen fed in the form of the products of pancreatic digestion may give rise to the formation of about 12 gms. of dextrose. No light was thrown upon the question whether the sugar was formed after a proteid synthesis had occurred or more directly from the amido bodies. The experiment showed at least that it is impossible for a large sugar radical to exist in the proteid molecule. The amido nitrogen fed was quantitatively eliminated, and did not protect the body's proteid as do meat and gelatine under similar circumstances.

THERAPEUTICS.

Artificial Proteids.—A strictly albuminous diet is especially indicated, according to P. Bermbach (Therap. Monatsch., Aug., 1903), in pulmonary tuberculosis, myocarditis, obesity, chlorosis, anemia, gastric diseases, hysteria, and diabetes. The artificial proteids, such as eucasin and tropon, constitute concentrated nourishment, since they contain about three times as many calories as the same amount of meat, and six times as many as the same weight of milk. In tuberculosis with disturbed digestion, the exclusive use of proteids, especially in concentrated form, does more good than any other diet, even when fever is present. A hypertrophied and degenerated heart calls for restriction of fluids and here again the artificial proteids are in place. An overloading of the stomach is avoided in gastric diseases with weak musculature, and, besides, small amounts of proteid frequently repeated, combine with the acid in cases of hyperchlorhydria. The usual dose of the preparations is a tablespoonful every half to two hours, preferably in wafers, followed by pepsin and hydrochloric acid, except when a hypersecretion exists.

Aristochin in Pertussis.—The new quinine preparation, aristochin, has been successfully employed by H. Kittel (Therap. Monatsch., Aug., 1903), in 34 cases of pertussis. The duration of the disease was materially shortened, especially in children under one year, and early cases were almost aborted. Digestion is never disturbed, and the entire system seems to be toned up. Children under one year receive three times a day as many centigrams as they are months old up to one decigram; older children three times a day two decigrams.

Electricity for Anal Fissure or Hemorrhoids.—Following the suggestion of Doumer, Laquerrière (Le Progrès Médical, Aug. 22, 1903) has employed electricity for the cure of anal fissure and hemorrhoids. He finds that currents of high frequency are to be preferred, that they have a favorable action on both acute and chronic hemorrhoids, and that they have a sedative effect on perirectal pain or congestion.

Value of Atoxyl.—Atoxyl is an organic preparation of arsenic, containing about 40 per cent. of this element and soluble to the extent of about 20 per cent. in warm water. It is recommended in the various skin affections where arsenic is indicated, and is especially valuable, since rapidly absorbed when introduced subcutaneously or into the muscles. F. Biringer (Therap. Monatsch., Aug., 1903) begins with 1-5 cubic centimeter (3 drops) of the 20-per-cent. solution, and increases daily by the same amount up to one cubic centimeter (15 drops), which is then injected every other day. Later this dose is given only twice a week. Pains or inflammations were never seen, though some patients received over 100 injections. The best results were obtained in psoriasis and lichen ruber planus, though with the former the local treatment is indispensable, and in the latter, certain cases will be intractable even with atoxyl. One patient also suffering from incipient phthisis, developed severe headache, but his weight increased remarkably. Good results were also obtained in pityriasis rosea, alopecia areata, multiple endotheliomata of the skin, juvenile warts, dermatitis herpetiformis, urticaria perstans and trophic disturbances of the nails.

Antisyphilitic Treatment in Tabes.—Amelioration or cure of tabes by mercurial treatment has not often been reported of late, says M. Faure (Jour de Méd. de Bordeaux, Aug. 16, 1903). On the other hand, it is well known that 60 per cent. of tabetic cases show a tendency to spontaneous arrest or regression. Investigation shows that the symptoms for which improvement is claimed through mercurial treatment are pain—which is variable and transitory—and incoordination, which has apparently been improved by many other therapeutic measures. The author states that the figures shown by Belugu and Gros in 2,500 cases demonstrate that there is a lower percentage of improvements and cures among those who have received antisyphilitic treatment than among those who have received no treatment; and finally, the number in whom the disease is aggravated by antisyphilitic treatment is greater than the number of those improved by that treatment. However, since improvement is seen in a certain proportion of cases from the use of mercury, the author holds that its effect should be tested; but the remedy should be withdrawn if it appear to exert an unfavorable, instead of a favorable influence.

Therapeutical Value of Mesotan.—Good results have been seen by A. Frankenburger (Münch. med. Woch., July 28, 1903) from the external application in all forms of rheumatism and rheumatic pains, provided the drug was not merely applied, but actually rubbed into the skin. Salicylic acid appeared in the urine in half an hour and symptoms of salicylism did not occur. The only disadvantage is the high price; since twenty to thirty grams are necessary, the cure is as yet very expensive.

The Medical News.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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A HELP IN THE DIAGNOSIS OF APPENDICITIS.

It is not only in the field of neurology that the important researches of Head have yielded results of far-reaching importance. Many obscure symptoms of hyperesthesia, analgesia or pain, have been interpreted in the light of this investigator's work on the relation of visceral area innervation to the spinal cord and the spinal nerve distribution, and lasting benefits conferred.

In the field of surgery we find, in a recent contribution, that James Sherren, Assistant Surgeon to the London Hospital (*Lancet*, Sept. 19, 1903), notes that very little attention has been paid by surgeons to the subject of cutaneous tenderness and visceral disease, and particularly no mention is made of appendicitis, although Head and Mackenzie, writing in 1892, have said that in affections of the intestines down to the upper part of the rectum, superficial tenderness may appear in the ninth, tenth and eleventh dorsal segmental areas.

Müller, of Berlin, Mackenzie, Mansell and Moullin mention the presence of hyperesthesia in this area, and the last two observers note that its disappearance suggests very strongly that the appendix has become gangrenous.

In order to discover the frequency with which this sign was present in appendicitis and to test the opinion that it is apt to disappear on perforation of the appendix, Sherren examined all the cases of appendicitis that were admitted to the London Hospital over a considerable period of time. More than 124 patients were thus examined, in which operation confirmed the diagnosis of appendicular disease.

He says that two varieties of tenderness are met with in appendicitis, the superficial, or cutaneous hyperalgesia, and the deep. Sherren's observations confirm in every particular the statements made by Head concerning deep tenderness. With reference to the cutaneous hyperalgesia, in the examination of 124 cases he finds at least 40 patients showed this sign. In six of these it was present as a complete band, 28 showed the "appendix triangle," and six had a circular area of cutaneous hyperalgesia.

The conclusions reached by the author are worthy of study and offer, we believe, observations of much moment, contributing a distinct advance to our knowledge of appendicitis.

He says that (1) cutaneous hyperalgesia is probably present at some time during all first attacks of appendicitis, except perhaps in the fulminating type, and depends upon tension within the appendix; (2) it may be absent in attacks after the first, if the first attack was of sufficient severity to destroy nerve tissue in the wall of the appendix; (3) when present in attacks subsequent to the first it often persists long after all other signs of the disease have gone, owing to the tension within the appendix being kept up by the pressure of a stricture; (4) it gradually disappears during convalescence as the other signs of the disease clear up; (5) disappearance of cutaneous hyperalgesia without improvement in the general condition of the patient is a sign of perforation or gangrene of the appendix and should be a signal for immediate operation; (6) the presence of cutaneous hyperalgesia is no contra-indication to operation. Abscess may form and general peritonitis may develop while it is present; (7) its absence, on the other hand, is of great importance. Absence of cutaneous hyperalgesia, the patient coming under observation early in the first attack of appendicitis, is a sign of gangrene of the appendix unless the case is obviously a mild one and the patient is rapidly getting well; (8) cutaneous hyperalgesia is, as a rule, absent in cases of abscess of the appendix; (9) the age of the patient and the position of the appendix have no influence upon the cutaneous hyperalgesia; (10) it is occasionally of use as an aid in diagnosis.

SUICIDE AND ITS PREVENTION.

The statistics of the registrar of the Bureau of Vital Statistics in the Health Department of New York City show an alarming increase in the number of suicides for last year as compared with other recent years. During 1902, there were in greater New York, 772 suicides, 477 of which were committed in the boroughs of Manhattan and Bronx. Ten years before, in 1892, the number of suicides in these same localities was only 241 so that the number of suicides has actually almost doubled in a single decade.

New York City is, however, not the worst of the cities of the United States in the matter of its suicide statistics. By actual comparison it is only fifth on the list, St. Louis having the unenviable distinction of being the first in this regard. It is a curious reflection that St. Louis with its German population and the reputation the city has acquired for the manufacture, if not the consumption, of a large amount and a high grade of one of the lighter malt liquors should occupy the same place in suicide statistics that was held for a long time by Munich in Bavaria, which enjoys the distinction of supremacy in the same peculiar reputation.

The means employed for the commission of suicide show that very probably not a little could be accomplished in lessening the number of these crimes by certain regulations. The increase in number is so great as to justify even extreme remedial methods in this respect, and yet there would seem to be no necessity except for the enactment of legal measures that need be by no means a source of as much inconvenience as many sanitary regulations. These were unpopular enough when introduced, but now that their purpose is well understood, are not only tolerated by the community without grumbling, but are actually welcomed and their revocation would be thoroughly resisted.

Of the 772 persons who committed suicide in New York City, during 1902, 268 accomplished their purpose by means of carbolic acid. Of these 176 were men and 92 were women. One hundred and seventy-six of the suicides chose to make their exits by means of shot wounds, among which only 7 were women. One hundred and eighteen persons committed suicide by means of illuminating gas, 77 of them men, and 41 women.

Of these three methods of suicide, representing about two-thirds of the whole number, it may be said at once that proper legal regulations could do not a little to limit the employment of fatal materials. With regard to carbolic acid, for instance, it is evident that its sale is entirely too unrestricted and that its comparatively infrequent use for domestic purposes for ends which might be well attained by other and less risky substances, should certainly be limited. There is, of course, another important element in this matter of suicide that must be dealt with. Entirely too much publicity is given to suicides by the sensational newspapers and as a consequence people who would ordinarily not think either of self-destruction or of the simple means necessary to accomplish such a purpose, have almost daily suggested to them all the possibilities of this method of suicide. Nearly every day in the year sees the story of some unfortunate blazoned forth in scarehead letters until others, who are mildly disequilibrated and happen for the moment to be in the midst of emotional strain, turn to this apparently easy refuge from their thoughts or their shame. A law forbidding the printing of the stories of suicides in anything more than simple announcements without sensational details probably would be followed by a reduction in the number of suicides.

With regard to firearms, all are agreed that there is altogether too much liberty allowed in the sale and carrying of deadly weapons.

There are laws already in existence, the enforcement of which would undoubtedly keep firearms more out of the hands of those who suddenly turn to the idea of self-destruction and find the means so ready than is the case at present.

With regard to suicides from illuminating gas, two things must be insisted on. First, the gas at present supplied by manufacturers for domestic use is entirely too poisonous and regulations are needed, after the plan of those insisted on in many parts of Europe, which require that the amount of carbon monoxide, the most poisonous element in illuminating gas, shall not exceed a certain proportion of the whole amount of gas supplied. It is generally conceded that in the American cities the proportion of this gas contained in ordinary illuminating gas is entirely too high. It would seem, as a second precaution against suicides from illuminating gas, that hotels and places of public lodgment should, for the sake of safety from fire as well as the possibility of the abuse of gas for suicidal purposes, be required, in our large cities at least, to be lighted exclusively by electricity.

Along these lines, without doubt, a considerable reduction in the number of suicides could be ef-

fected. There need be little interference with personal privileges and less inconvenience imposed upon the general public. Physicians should interest themselves in securing legislation in these important matters, for the prevention of suicide is as serious a consideration as the exercise of prophylactic precautions against any of the frequently fatal infectious diseases. Proper enforcement of good laws in this respect probably would not prevent suicide entirely, but would reduce very materially, that is, at least by many hundreds or even thousands, the death rate from this cause throughout the country. Undoubtedly the effort is well worth the consideration of the members of the profession.

MEDICAL RECONCILIATION IN NEW YORK.

For years the profession of this State have had an earnest desire to be united in one body, but for one reason or another the efforts of those most interested have been thwarted.

It has become apparent within the past year, however, that all personal considerations must be laid aside and that the unification so much demanded should become effective.

No more hopeful measure could be wished than the stand taken Thursday afternoon last by the members of the New York State Medical Association, in a special meeting held at the New York Academy of Medicine.

Dr. Joseph Bryant introduced the following resolution which was seconded by Drs. Wyeth and Ferguson:

Whereas: The members of the New York State Medical Association desire a union of the Medical Profession in the State of New York, and

Whereas: It is deemed expedient for the attainment of this purpose to make further effort to bring together the New York State Medical Association and the Medical Society of the State of New York under the name of "The Medical Society of the State of New York."

Resolved: That a Committee of Five be appointed by the chair, and said Committee is hereby empowered to do whatever is necessary and expedient to bring about such a union in a just and equitable manner, and

Resolved: That the Committee so empowered may confer, cooperate and unite with a Committee of the Medical Society of the State of New York for the purpose of forming said union of the two medical organizations, and

Resolved: That a copy of these resolutions be transmitted to the Secretary of the Medical Society of the State of New York, with a request that their Conference Committee be granted similar powers.

It can be seen by this resolution, which was adopted without a dissenting vote, that the State Association has done all in its power to bring about union, and it now remains for the State Society to take similar straightforward action or belie their expressed sentiments.

We cannot urge too strongly on the members of the State Society to pass a similar resolution and from the joint committee of ten we hope to see emerge from the combination of the two societies one new body worthy of the profession of the State.

ECHOES AND NEWS.

NEW YORK.

For Harmonious Union.—At a meeting of committees from the Cortland County Medical Society and the Cortland County Medical Association, held at the office of Dr. F. W. Higgins, on Friday, Sept. 4, 1903, the following resolution was adopted:

Resolved: That, as about thirty-five or forty per cent. of the members of the Cortland County Medical Society are members of both the Society and Association; that we believe that we express the sentiment of nearly all the profession of the County, in the desire for the harmonious union of the two medical organizations of the State, since we believe our influence and power in the State in obtaining needed legislation and preventing the enactment of harmful laws, could be greatly enhanced thereby, and we recommend that all proper measures be taken to bring about this end.

Committee for Society: F. W. Higgins, H. T. Dana, J. W. Whitney. Committee for Association: S. J. Sornberger, C. D. Ver Nooy, F. D. Reese.

New Child Labor Laws.—Three new child labor laws—the Hill-Finch measures prepared by the Child Labor Committee and passed by the Legislature last winter went into effect Oct. 1. The laws do not affect the age at which children may work, but do require parents to supply real evidence that the little laborer has reached fourteen years.

Gift for Seney Hospital.—The Seney Hospital in Brooklyn will receive a bequest of $25,000 by the will of Mrs. Cornelia Prosser, of Cleveland, Ohio, which, according to a despatch from that city, was admitted to probate on Sept. 24.

Recommendation for New State Insane Hospital.—The State Lunacy Commission will recommend to the next legislature an appropriation for the erection of an additional State insane hospital, to be located either at Cambridge or Greenwich, in Washington county. The commission has been considering sites for a new hospital for some months, and President Peterson, Commissioner Parkhurst, State Architect Heins, Hydraulic Engineer Whitham and Hospital Superintendent Smith, of Central Islip, Hurd, of Buffalo, and Pilgrim of Poughkeepsie, have inspected the two Washington county sites, which appear to be the most favorably considered locations for the new institution.

New Registry of Nurses.—A new registry of nurses has been started in 408 West Fifty-seventh Street, which it is proposed will be the finest institution of its kind in this city. The registry accepts only graduate nurses of the best standing. Great care is taken in allowing nurses to register. Application blanks must be submitted, and when references have been looked up,

the matter is placed before a Committee on Admissions for action.

College of Physicians and Surgeons Reopens.—On Thursday, Sept. 24, the medical department of Columbia University formally began the work of another year. The exercises were attended by President Butler and many officers and students. Following the address of welcome by Dr. Butler, Prof. Walter B. James was introduced and took as his subject "The Old and the New Medicine." Mr. F. Hopkinson Smith, the well-known author, sat on the platform but took no part in the exercises. There is a marked falling off in the number of the students this year, largely owing to an increase in the requirements for entrance. The first year class numbers only 110 as against nearly 200 last year; but 65 per cent. are college graduates, whereas, in 1902, only 30 per cent. held academic degrees. The total number of students registered in 1902-'03 was 677, while, so far, there are registered this year only 610. Dr. Canfield, the University librarian, announced that a new reference library has been opened in the Study Room with 300 volumes. About $2,000 has been set aside for the purchase of books, but it was thought best to reserve a considerable portion of this, to be used in buying such works as the students themselves shall from time to time suggest. Dr. T. Mitchell Prudden is chairman of the Committee on Accessions.

Our Water Supply.—The New York *Times*, in commenting on this subject, says apropos of the report of the Commission on Additional Water Supply, that the members of the commission and the citizens of New York are to be congratulated upon the thoroughness with which this investigation is being conducted. Dissent from conclusions fortified by facts so carefully gathered and conscientiously verified would show more of courage than of discretion in one who had not taken equal trouble to advise himself. The members of the commission are competent and conscientious, and are showing due regard for their official and professional responsibilities. They find, notwithstanding the most favorable anticipations relative to the restriction of waste, that immediate steps for a large increase in the city's water supply are demanded in the public interest. The only danger of agreement with this conclusion lies in the fact that with an increased supply measures of economy in distribution and use may be regarded as indefinitely negligible, and that waste will go on and increase until beyond hope of regulation or control. It is undoubtedly true, however, that effective waste prevention is a matter of time, and often of a very long time, and that meanwhile the supply may be found inadequate. Hence, without belittling economy or dismissing it from consideration, the Commissioners deal with the emergency with which the city is confronted and have looked for additional water. They point out that a supply greater than that of Manhattan, the Bronx, and Brooklyn together, and capable of development to 500,000,000 gallons per day, may be had from certain eastern tributaries of the Hudson River, from Esopus Creek, on the easterly slope of the Catskill Range, or from the Hudson River above Poughkeepsie, supplemented by filtration by approved methods. Of these alternative propositions the Commissioners express strong preferences for one which deals with upland water. The surveys, investigations, and analyses, chemical and biological, not yet fully completed, will probably determine their preference upon one of the new areas above indicated. Meanwhile, any popular discussion of the relative advantages of one or the other would probably be unprofitable. The Commissioners believe that the additional supply, from whatever source derived, should be brought to the city through a high-level aqueduct delivering water at the northern limit of the municipality under a pressure due to a head of 300 feet. The high service demands, already great, are rapidly growing, house pumps are expensive and troublesome, and the fire protection afforded by a high-pressure gravity supply of ample volume will be of great public advantage. The quality of the water obtainable from nearly all of the possible sources indicated by the commission would compare favorably with Croton in average hardness, and more than favorably in potability from the bacteriological point of view. Some of the streams give harder water than others, owing to the more liberal disposition of limestone rocks in the geological formation, but by judicious mingling in the impounding reservoirs the average hardness of Croton water need not be exceeded. In anticipation of the probable requirements of the near future, the Commission recommends that the aqueduct be built with a capacity to deliver 500,000,000 gallons every twenty-four hours. Filter plants, not only for Croton water, but for that of all surface streams, are strongly recommended, and plans and estimates covering them are now in preparation.

The investigations on Long Island point to the conclusion that local water resources should be utilized to the fullest extent before going further afield. The need of additional water for Queens is recognized, and a further development of the ground-water supply is recommended. Richmond also needs more water than is now available, and lacks resources inviting development within its own limits. It will probably have to draw additional supplies temporarily from New Jersey, and ultimately from Brooklyn.

PHILADELPHIA.

Opening of Medical Schools.—Jefferson Medical College began its seventy-ninth year on September 24, one week earlier than the usual time of opening. The Medical Department of the University of Pennsylvania was opened on September 25.

Notes of the State Medical Society.—The York meeting, reported in full in other columns, was one of the most successful in the history of the Society. The papers, though greatly increased in number, were mainly of a high order. The holding of three sessions in two sections allowed of this extension of the program. Scientific business was also promoted by the new organization which put the routine affairs of the Society in the hands of an executive council. The citizens of York and the York County Medical Society furnished abundant entertainment for the members and visiting ladies. The excursion to Gettysburg on Friday was extended by the County Society and was a thoroughly enjoyable occasion. The party contained about 200 people. One of the features of the meeting was the report of the committee to examine school text-books. They discussed the controversy with the Women's Temperance Union on the subject of alcoholic liquors and tobacco. The committee reported that it had in four years published reviews of 51 text-books. In general the committee says of the school text-books on physiology and hygiene that they contain many errors and much misleading information and very serious omissions. "The books, as a whole, cannot be recommended, although some few are good. We are sorry to be compelled to say that the books supervised by the Women's Christian Temperance Union committee are the most reprehensive." The committee quotes from an article, by Mary H. Hunt, to show that the Women's Christian Temperance Union believes that "temperance should be the chief topic in these books," whereas, the committee believes that the books "should treat of physiology and hygiene, giving full and truthful information as to the nature and effects of alcohol and tobacco, but making these subservient to the general subjects."

The committee criticises the indiscriminate use of the word "poison" as applied to all forms of alcohol, saying, "it is absurd to teach that cider, beer, wine, etc., in any dose is a poison, whereas, we all know that a tumbler of pure alcohol is. This is but the morbid expression of fanatics who are guided by zeal rather than wisdom." Referring to the use of whisky or brandy in a drowning accident case, the committee says: "It would be more consistent with temperance teaching to recommend the use of whisky containing 40 to 50 per cent. of alcohol, than aromatic spirits of ammonia, which contain 700 parts in 1000 of alcohol," and the report adds, "we should give the whisky, save the patient and discuss it afterward, if necessary." The committee recommends that a committee be appointed to consider the advisability of State supervision of school text-books. The report created considerable stir in the Executive Council. It was laid on the table.

Obituary.—Dr. Joshua G. Allen died at his home in this city September 26, of heart disease. Dr. Allen was born in Delaware County seventy-three years ago, and graduated from the University of Pennsylvania when about twenty-two years of age. He attained prominence in obstetrics and diseases of women and children, being a visiting physician to the Philadelphia Lying-in Charity Hospital for a period of thirty years.

Dr. John H. B. Amick, a prominent physician and politician in the Thirty-seventh Ward, died in the German Hospital September 26 from a complication of diseases. Dr. Amick was born in 1851, graduated from the University of Pennsylvania, was Major Surgeon of the Nineteenth Regiment during the Spanish War, and was a thirty-third degree Mason.

CHICAGO.

New Hospital for Children.—A new hospital for children on ground adjoining the Cook County Hospital is now an assured fact, for the reason that a majority of the members of the County Board have expressed themselves as being in favor of the plan and the building and grounds committee recently held a meeting and took up the matter. It was voted to instruct the County architect to draw plans and specifications for such a building the cost not to exceed $50,000. The County architect was also instructed to prepare plans for the plumbing and lighting system, at the buildings to be erected at Dunning, for which contracts have already been let.

Formalin in Milk.—Formalin was found during the week in one shipper's milk. The sale was at once stopped by the dealer and the next shipment was met at the train and the milk dumped into the sewer. The farmer was notified that his milk was excluded from sale in the city.

Examination for Assistant Bacteriologist.—An original entrance examination for the position of assistant bacteriologist of the Health Department will be held October 22. The salary attached to the position is $1,000. Those desiring to take the examination must have been residents of Chicago for one year, and must file applications prior to the examination.

American Association of Obstetricians and Gynecologists.—At the Sixteenth Annual Meeting of this Association, held in this city September 22, 23 and 24, the following officers were elected for the ensuing year: President, Dr. Walter B. Dorsett, St. Louis, Mo.; First Vice-President, Dr. A. B. Miller, Syracuse, N. Y.; Second Vice-President, Dr. W. D. Haggard, Nashville, Tenn.; Secretary, Dr. Wm. Warren Potter, Buffalo, N. Y., reelected; Treasurer, Dr. X. O. Werder, Pittsburg, Pa., reelected. The time and place for holding the next annual meeting were left to the Executive Council to decide.

Big Fees.—Apropos of big fees, the following item appeared in a recent issue of the Chicago *Record-Herald*, under Washington Correspondence, by William E. Curtis:

"There is some discussion among physicians in Washington, and others who know of the circumstances, over a bill recently rendered by Dr. Halstead of Johns Hopkins University for performing an appendicitis operation. He was called to Washington by the regular physician of a western family, who were spending the winter there, to make a diagnosis of the case of a lady who was found to be in a desperate situation. He performed the operation with great skill and went to Washington three times afterward during the next ten days to see how his patient was doing. She recovered slowly, and is now as well as ever, and a few weeks since he sent her husband a bill for $11,500—$10,000 for the operation and $500 each for three visits. The husband declined to pay that amount and represented that he could not afford to do so; that his income would not permit it, and that if the doctor insisted upon the charge he would be compelled to give him notes for from one to five years. He offered his check for $2,500, saying that he understood that was the fee usually charged for appendicitis operations by the most eminent surgeons of New York. Dr. Halstead returned the check and insisted upon his original charge. There are several famous physicians in Baltimore who are frequently sent for by rich people in Washington for operations and consultations. They do not seem to have any regular scale of fees, but charge from $100 to $500 a visit, according to the financial circumstances of the patient. Not long ago Dr. Kelley went to Washington to see a very wealthy lady in consultation with another physician. He sent in a bill for $1,000. While he was there he drove three or four miles into the country to see another patient of the physician who had invited him to Washington, made an examination and gave recommendations for treatment. Upon inquiring into the circumstances of the family and finding that the husband was a government clerk with a salary of $1,500 a year he sent in a bill for $50, although he devoted more than twice as much time to the second patient as to the first and the case was very much more serious. Dr. Kelley recently had an experience similar to that of Dr. Halstead. He performed a capital operation upon a Baltimore millionaire and sent him a bill for $20,000. The man refused to pay. Dr. Kelley replied: 'You were good enough to say that I saved your life. I consider your life worth about $20,000; if you think that amount is excessive you can fix your own valuation.' The man sent him a check for $5,000, which Dr. Kelley accepted. Dr. Halstead is famous for charging big fees. Not long ago he performed a rather simple operation upon a Washington lady and sent in a bill for $3,500. The patient gasped when she saw it, but paid the charge without question."

A Prohibition Hospital.—The corner-stone of the new Frances E. Willard National Temperance Hospital, on Lincoln street, Chicago, was laid last week, on the anniversary of the birthday of Miss Willard, in the presence of a distinguished company of temperance advocates and medical men.

Opening Session of the College of Physicians and Surgeons.—The regular session of the College of Physicians and Surgeons (Medical Department of

the University of Illinois) was opened October 1, with an address by Dr. George P. Dreyer.

Rush Medical College.—The opening exercises of this institution will be held October 6, at which time an address will be delivered by Professor Charles Scott Sherrington, the eminent physiologist of Liverpool.

GENERAL.

Yellow Fever Quarantine.—The yellow fever situation in Laredo, Texas, is beginning to assume a very grave phase. There are now in that city 37 cases of fever, of which 16 have been pronounced genuine yellow fever by the marine hospital service experts, 10 cases have been pronounced suspicious, and 11 new cases have been reported last Wednesday, some of them genuine. It is impossible to learn from the Mexican authorities how many cases exist in Nuevo Laredo, but it is known that there is a very large number. Among the cases reported very grave to-day is that of United States Vice Consul J. F. Kimball. Nuevo Laredo, Mexico, established a strict quarantine against this city. The lack of accommodation is felt by the people of Laredo, Texas, railroad lines being tied up and business generally at a standstill. No official news can be obtained from Monterey, but it is learned on good authority that there are at least ten cases of fever there.

A Man of Sense.—The eminent Bavarian sanitarian, Professor Pettenkofer, was once trying to convince a Munich householder of the advantages of plumbing and drainage; but his conservative friend answered: "Nonsense! I want to be able to smell my house."

Sanitation or Death Penalty.—Advices received from Kabul, Afghanistan, under date of August 31, say that the cholera epidemic is abating. Several prominent persons were victims of the disease. Rigorous measures were adopted to check its spread. The troops at Kabul were all moved into camps outside the walls, and the population was forbidden to eat fruit or vegetables. Any infringement of the regulations was punishable by death. By order of the Ameer food was distributed to the poor.

Duty of Ship's Doctor.—A suit to determine the right of a Captain of a naval vessel to order the ship's surgeon to perform other than his professional duties, has been set down for trial before Judge Andrew Kirkpatrick in the United States District Court Oct. 5. The action, in which no damages are specified, is brought by Dr. R. N. Sheppard, a surgeon formerly employed on a United States revenue cutter against Capt. Voelker, the commander of the vessel. According to the surgeon's contentions the ship was detailed to carry a party upon a geological survey to foreign coasts, and he was asked by the captain to take part in making the soundings. He demurred, whereupon, he alleges, he was ordered to do so and refused. When the cutter returned to American waters he was discharged by the Government authorities upon representations of the captain.

Experiments in Quantitative Food Values.—Dr. Russell H. Chittenden, of Yale, has begun a series of experiments in food values through data furnished by twenty United States soldiers under varying dietetic conditions. Professor Chittenden has made public the significance of his work as follows: "Through the courtesy of Secretary Root and Surgeon General O'Reilly of the army, the War Department will cooperate with the Sheffield laboratory in a physiological study of the minimum amount of proteid and albuminous food required for the maintenance of health and strength under ordinary conditions of life. In carrying out this purpose 20 men have been detailed from the Hospital Corps of the army, and will be in New Haven on Monday. The scientific school has fitted up a house in Vanderbilt square, Temple and Wall streets, where the men will be housed and cared for during the period of the investigation, doubtless for about nine months. In this there are no special theories involved, and no special systems of dietetics, but the object specially aimed at is to ascertain experimentally whether physiological economy in diet cannot be practised with distinct betterment to the body and without loss of strength and vigor. There is apparently no question that people ordinarily consume much more food than there is any real necessity for, and that this excess of food is in the long run detrimental to health and defeats the very objects aimed at. It is with a view to gather as many facts as possible on this subject that the study in question is undertaken."

This investigation is a continuation on a large scale of earlier observations made in the Sheffield Scientific School last year.

Tuberculosis Commission Exposition in Baltimore.—The Tuberculosis Commission and the Maryland Public Health Association have decided to hold an exposition in Baltimore during January. Dr. Marshall L. Price, medical officer of the Tuberculosis Commission, in speaking of the coming exposition, said: "In this display there will be grouped exhibits relating to all sides of the question of tuberculosis in the United States. We expect exhibits from England and the Continent. The exposition aims to be both popular and scientific, and will afford opportunities for study as well as matters of popular interest. The exposition will be held under the combined auspices of the Tuberculosis Commission and the Maryland Public Health Association. The officers of both these societies feel the necessity of awakening the public to the importance and extent of the fatal disease in our midst. Before any successful concerted action can be taken to check its ravages it is felt that the best way of doing this is to present to the public in concrete form what is being done to prevent the spread of the disease and the measures used in its cure, as well as the extent of its ravages in our own and other communities. It is also felt to be important to give physicians in the State the opportunity of studying the latest measure of prevention and cure. The exhibits will include the methods and regulations used in various cities in the restriction and control of tuberculosis, and the copies of the ordinances posted in street cars and public places forbidding expectoration. Plans and diagrams of public sanatoria in various States and cities, photographs of infected houses and districts in New York and elsewhere and appliances used in the prevention, diagnosis and treatment of pulmonary tuberculosis will be put on view. Among the appliances used in the treatment and which we expect to have on exhibition are the X-ray cells, pneumatic cabinets and a number of things used in the outdoor treatment of consumption, such as sleeping bags, reclining chairs and tents. One of the most ingenious and valuable of the articles employed in the open air treatment to be seen there is the tent devised by Professor Fisher, of Yale University. This tent through the courtesy of Professor Fisher, will be donated to the State for the purpose of the treat

ment of incipient cases of consumption. In addition to the various exhibits it is the intention of the promoters to have popular and scientific lectures by men eminent in the anti-tuberculosis crusade. The exhibition will be the first of its kind ever held, and it is hoped that it will arouse a great interest among professional and laymen in the United States and abroad." The Tuberculosis Commission includes Dr. W. S. Thayer (president), Dr. W. Frank Hines, Dr. Lillian Welsh, Messrs. George Stewart Brown, John M. Glenn and Dr. Marshall Langston Price, medical officer. The members of the Maryland Public Health Association are Dr. T. B. Owings, Roger Brook, F. H. Thompson, C. R. Shelley, William R. Stokes, Dr. L. J. Dirickson, Charles O'Donovan and Dr. John S. Fulton.

Tuberculosis Hints.—Keep away from alcohol in every form. That way lies death. This is a summary of one of the most important and striking passages in Dr. Lawrence F. Flick's new book, "Consumption, a Curable and Preventable Disease." "The noted specialist," says the Philadelphia *North American*, "handles his subject with a confidence and sureness that bring conviction to many who still doubt the mastery of 'the great white plague' by the new and rational treatment that is applied by Dr. Flick and his assistants in the Phipps Institute in this city and the sanatorium in White Haven. The caution against the use of alcohol is at variance with the accepted treatment that has obtained for centuries. 'Alcoholism,' said Dr. Flick, 'not only kills the individual, but appears to produce a predisposition for consumption in the offspring.' Among the other ancient delusions exploded by the book are the heredity of consumption; the evil effect of night air upon the patient; the necessity for avoiding cold and drafts and the need for dieting." He recommends that one heavy meal be eaten every day. In addition he recommends the following diet: A pint of milk before rising, a pint of milk and two raw eggs after the bath, a pint of milk and one raw egg in mid-forenoon; if dinner is at noon, another pint of milk and egg at 3; a pint of milk and two raw eggs at 6; a pint of milk and one egg upon retiring. Dr. Flick has this to say of the need for fresh air and sunshine: "An ample supply of good, fresh outdoor air, night and day, is necessary. It must be had irrespective of weather and temperature. When possible consumptives should sleep outdoors at night. If they cannot sleep outdoors they should make indoors as near like outdoors as possible. Every window in the bedroom should be kept open. Blinds and shades should be taken down and shutters should be taken off or thrown open. Sun and air should be allowed free access to the room. There need be no fear of drafts. Without drafts the air in a room cannot be kept fresh and pure. Outside air is good anywhere. Even in cities outside air answers all practical purposes for the cure of consumption. Country air, of course, is freer from smoke and dust and is fresher and sweeter than city air; but city air, if it is outside air, is good enough. Mountain air is believed to have special qualities of value in the treatment of consumption. These probably are more imaginary than real. It may be that mountain air in certain cases helps to bring about recovery by expanding the lungs more than usual. Sea air sometimes is of value in the treatment of consumption, when the disease is complicated with heart trouble. Such cases do much better at sea level than in the mountains. Climate in itself is of little value in the treatment of consumption. It is the outside air that counts. 'Above all else,' said Dr. Flick, in discussing the subject with a reporter for the *North American*, 'the patient should hope and fight for life. Discouragement means death in most cases. The cures that have been made among those of determined mind are simply astonishing. In most cases the chances for life lie solely within the reach of the sick ones. If they will persevere with the feeding and the fresh-air regulations, observe cleanliness and sanitary rules and make a fight health awaits them."

Medical and Dental Departments Combine.—The Medical and Dental Departments of the National University have merged with the Medical and Dental Departments of the Columbian University, Washington. Students of the Medical and Dental Departments of the National University will be admitted to the respective departments of the Columbian University upon presentation of certificate from Dr. H. H. Barker, Dean, and will be assigned to classes of the same grade as those to which they would be admitted in the National. Those who have already graduated from these two departments of the National will receive, upon application, a certificate from Columbian, conferring upon them all the rights and privileges of this institution to which graduates are entitled.

Obituary.—Dr. Frederick J. Halton, who had been in practice in Brooklyn for about twenty years, died last week at his home, 101 St. John's place, of valvular disease of the heart. He had long suffered with rheumatism. He was a graduate of the Long Island College Hospital.

Dr. William E. Naughton, who was twenty-nine years old and a graduate in medicine from the Long Island College Hospital, died in his home in Harlem of pneumonia on Wednesday, Sept. 23. He was buried from his mother's home, 194 Clinton street, Brooklyn. His father, James W. Naughton, was for many years Superintendent of Buildings under the old Board of Education.

Dr. Calvin Skinner, one of the most widely known physicians in northern New York, is dead at his home in Malone, N. Y. He was born in Royalton, Vt., May 29, 1818. He was a graduate of the University of Vermont and of Dartmouth College, taking his medical degree at Dartmouth, where he was a classmate of the late Henry J. Raymond. When the Civil War broke out he enlisted as surgeon in the One Hundred and Sixth New York Volunteers. In 1884 he took a prominent part in founding the Northern New York Deaf Mute Institution, and acted as trustee and surgeon for many years.

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Fifty-third Annual Meeting, held at York, September 22, 23 and 24, 1903.

(Continued from Page 622.)

FIRST DAY—SEPTEMBER 22 (*Continued*).

President's Address.—Dr. William M. Welch spoke of the early history of the Society, which was born in Lancaster County in 1848. He then dwelt briefly upon some of the recent advances in medicine and discussed at some length the duty of the State in regard to tuberculosis, emphasizing the importance of a more thorough cooperation between the physicians, sanitary officials, and people of a community. Physicians should willingly cooperate with officials in their ef-

forts to stamp out a disease, as for instance in cases where notification is required. This expedient seems to be a logical necessity in the case of tuberculosis and compulsory notification and registration cannot be much longer delayed. This might well receive the endorsement of the Society. The work of exterminating yellow fever in Cuba was reviewed and the latter part of the address devoted to a consideration of the question of elevating the standard of the profession.

SECOND DAY—SEPTEMBER 23.

Streptococci and Antistreptococcus Serum.—Dr. D. H. Bergey, of Philadelphia, said that the old classifications of streptococci according to length, lesion, etc., were not exact. The organism probably presents varieties that vary with their environment. During the past summer he has found a variety in animals that is chromogenic. Recent studies appear to demonstrate that the streptococcus cannot be classed as the cause of acute articular rheumatism, scarlet fever, or smallpox. It is more likely that this organism is an accidental invader in those diseases. The progress of attempts to prepare an antistreptococcus serum indicates that ultimate success will crown the endeavor. It is practically determined that any strain of the organism may be selected for the purpose of immunizing the horse in the preparation of serum.

Some Points on Appliances for Bacteriological Work by Busy Country Doctors.—Dr. A. C. Wentz, of Hanover, exhibited a large number of exceedingly ingenious simple contrivances for the study of bacteria and tissues.

Instruction of Medical Students in the Diagnosis of Preventable Diseases.—Dr. Benjamin Lee, of Philadelphia, in making a plea for the more careful instruction of students in this line, contrasted the facilities of the present student with those of fifty years ago. Then each student was under a preceptor and had the opportunity of seeing the whole range of diseases, including the contagious varieties. When he graduated he was familiar with the exanthemata. Now the quiz class and the summer school have taken the place of the preceptor and text-books describe only typical cases. As a consequence the young physician gains wisdom at the expense of the families among whom he practises. Among the diseases specifically considered was typhoid fever. Relatively speaking, diagnosis is three times more important than treatment.

Dr. J. M. Anders, of Philadelphia, in the discussion of this paper, said that the subject was a most important and timely one, as students seldom have an opportunity to study contagious diseases at the bedside. In Philadelphia they have an opportunity to visit the Municipal Hospital.

Dr. Seneca Egbert described the scheduling of the students in Philadelphia who wished to visit the Municipal Hospital. Squads of 10 were given a practical, bedside demonstration of cases by Dr. Welch. These demonstrations lasted two hours on each disease. Each student was furnished cap and gown and, when coming from the ward, thoroughly disinfected his hands and face. Only one case of smallpox has been contracted by students during four years, and that one had never been vaccinated. Students are now required to be vaccinated and must sign a statement releasing the college and hospital authorities from all responsibility if infection occurs. This statement rather frightens some, but about one half of the men accept the opportunity.

Dr. Lee remarked, in closing, that this teaching should be made compulsory, instead of voluntary.

Effect on Typhoid Fever of Improved Municipal Water Supply.—Dr. J. Frank Small, of York, gave statistics regarding the incidence of typhoid fever in York before and after the institution of a filtration plant for the city water supply. A noticeable diminution has occurred. From 1895 to 1899 the number of cases yearly ranged from 65 to 129, excluding epidemics. The population averaged about 30,000. Since 1899, with filtration, the cases run from 2 to 45, the population being 36,000. Bacteriological examination of the water in 1898 showed 1,390 bacteria per cubic centimeter; in 1903, 5.6 per cubic centimeter. Colon bacilli were present before filtration, now they are absent.

In discussion, Dr. Seneca Egbert said that the question of typhoid was a very important one, there being entirely too many cases in the State. The public at large does not appreciate the influence of the water supply of cities and it needs demonstration.

Dr. D. H. Bergey said that the present incidence in York was too high for filtered water and careful search should be made for other sources.

A Clinical Study of Cerebrospinal Meningitis.—Drs. T. C. Ely and J. J. Snyder, of Philadelphia, gave a summary of the clinical findings in 23 cases of cerebrospinal meningitis, which occurred among the sailors at League Island. All the patients were young recruits, no seasoned sailor being attacked. Fatal cases numbered 7. The signs of Kernig and Babinski were present in nearly all cases. An interesting feature was that very little or no cough was present in those patients that had pneumonia. Respirations were slow and pulse slower than common in this condition. This was probably due to interference with the vagus by inflammation or pressure. There was a remarkable absence of motor symptoms in the non-fatal cases. The comparative absence of eruption was also noteworthy.

In discussing this paper, Dr. A. O. J. Kelly spoke of the importance of the Quincke puncture not only as a diagnostic, but also as a therapeutic measure. In one case of severe typhoid fever symptoms resembling those of meningitis developed and finally lumbar puncture was resorted to as a means of diagnosis. An ounce of clear fluid was obtained, but in a half-hour the patient's symptoms were markedly improved.

Aneurism of the Left Subclavian Artery, Treated by Wiring.—This interesting case was reported by Dr. Judson Daland, of Philadelphia. The patient was a man of fifty-two years, with a history of alcoholism, rheumatism, and possibly syphilis. He had a tumor of two years' duration in the lower part of the neck. Aneurism was diagnosed and 20 feet of gold and platinum wire introduced. Through this was passed a current of electricity, the maximum strength attained being 80 milliampères. Physical signs were not much changed. The patient died twenty days after operation. Autopsy revealed an aneurism of the left subclavian extending to the axillary. A large clot had formed about the wire as a nucleus. The case then was one where ligation was not possible, where medical treatment was ineffectual, and where wiring and electricity produced coagulation of the blood, but did not prevent increase in size of the sac. The operation probably hastened death by a few weeks. The operation is considered to be worthy of trial in cases not benefited by medical treatment. Means to increase the coagulability of the blood and to lower blood pressure should be used for a week before and two weeks after wiring. These include the use of gelatin, rest, etc. Such operations would probably be more successful if they were used early instead of as a last resort.

Dr. J. M. Anders, in the discussion, said that the suggestion of rest and efforts to minimize blood pres-

sure was sound advice. The use of nitroglycerin should be borne in mind.

Dr. Daland said that his case was of interest because it was probably the first recorded instance of the use of wire and electricity in a subclavian aneurism. The vessel is usually ligated in these cases, but this was impossible in this instance.

Typhoid Fever.—Dr. L. B. Kline, of Catawissa, called attention to the continued ravages of this disease which is not confined to the cities and large towns of the State.

Dr. A. O. J. Kelly, in the discussion, emphasized the benefits to be derived from the use of hypodermoclysis in profoundly toxic cases with the marked state, scanty urine, etc. In less marked toxic cases enteroclysis will give valuable results. This measure will act more quickly and surely if the solution be of high temperature, 130° F. being permissible.

Need of Wards in Public Hospitals for Treatment of Curable Cases of Insanity.—Dr. J. H. W. Rhein, of Philadelphia, furnished arguments in favor of this provision. Cases should not be kept longer than two or three months. Sending mild, curable cases to such institutions permits them to escape the stigma of being in an asylum. In some cases a second attack seems to have originated in the remembrance of the first. Such wards would insure privacy and nursing by skilled women nurses. They would afford an opportunity to observe many cases that need watching in their incipiency. Lastly, there would be a gain in material for purposes of clinical teaching. Annoyance to other patients could easily be avoided.

Dietetic Treatment of Nephritis.—Dr. J. M. Anders of Philadelphia, said that although general rules are important, a flexible dietary must be employed and varied to suit each individual patient. When gastritis is present a milk diet may be employed, but ordinarily he does not prefer the so-called milk diet. Its prolonged use is followed by undue general weakness. The amount of fluids that can be ingested without overworking the heart must be very carefully determined. When digestion and appetite are moderately good, a mixed diet is proper. Though the excretion of albumin may be easily doubled by a proteid diet, still Dr. Anders believes that there is a tendency in the profession to supply too little proteid to patients having nephritis. Proteids form a large part of the tissues of the body and each individual must have a certain amount. The nitrogen excretion for light meats is probably no better than that for dark meats. The best way to decide on a diet for an individual case is to consider first, what the patient should take and second, what he can take. Ordinarily it can be made up of milk, about 40 per cent., meat in a somewhat restricted amount, and vegetables freely. It is impossible to give the amount of each in grains, but by carefully changing an approximately correct diet can be secured. Meals should be small and given at three-hour intervals. The relation of the diet to the strength of the patient is of vital importance, as well as is its effect on the albuminuria. Cryoscopy is of value in ascertaining the secreting power of the kidneys, especially in showing the difference between the two kidneys. When catheterization of the ureters is not possible, cryoscopy of the blood may be practised. Diet should be increased if bodily weight decreases.

Recovery from Perforation in Typhoid Fever.—Dr. J. H. Musser, of Philadelphia, reported this instructive case. The patient had a rather severe attack of typhoid fever with a persistent bronchopneumonia toward its close. A relapse of the fever then occurred and the patient became very seriously ill. On the fourth day of the relapse there was a slight chill accompanied by a fall of the temperature, local pain between the umbilicus and pubes, and vesical symptoms. The diagnosis of perforation was made, but the patient's general condition absolutely precluded operation. Opiates were required for the pain for a couple of days and then improvement in peritoneal symptoms began and progressed steadily. On the sixth day after perforation, intestinal hemorrhages began and the patient finally died from that complication. Autopsy revealed a perforation of the ileum with a healed local peritonitis limited by adhesions between the coil of intestine and the bladder. This makes the case an undoubted one of natural recovery from intestinal perforation in typhoid fever. Dr. Musser stated that he did not report the case because he is opposed to operation in perforation. He simply thought that operation would cause the death of the patient in this instance. At the same time it may furnish the consolation in some cases that operation is not always a necessity.

X-ray, Light and High Frequency Electricity.—Dr. Russell H. Boggs, of Pittsburg, compared the efficacy of these methods of treatment and their mode of application. He does not support the statement that the X-ray causes metastases in carcinoma, believing rather that it prevents their occurrence. Their presence during treatment is simply a coincidence. Results from the use of the X-ray have been encouraging. Of 28 cases of pulmonary tuberculosis, 2 were apparently cured, this result also being attained in 3 of 5 cases of tubercular glands. Of 20 cases of lupus only 2 failed to respond and these were possibly syphilitic. Dr. Boggs believes it necessary to use caution in X-raying deep tumors as absorption of broken down material may produce a septic condition. Pain was relieved in several cases of carcinoma of rectum, uterus, and liver.

The X-ray in Chronic and Malignant Diseases of the Skin and Superficial Tissues.—Dr. Samuel H. Heller, of Lancaster, said that sarcoma responded the least to X-ray treatment. In 2 cases growth was stimulated. Carcinoma responded quickly in every instance. Good results were obtained in cases of lupus, acne, and ivy poisoning. During three years' use of the X-ray not one case discharged as cured has had a recurrence. Heller believes that some poor results are obtained because manufacturers send out inferior instruments. Many adverse criticisms come from inexperienced operators.

The Roentgen Ray as a Palliative in Cancer.—Dr. Charles L. Leonard, of Philadelphia, spoke very encouragingly of the results of X-ray treatment in inoperable cases of cancer. He still adheres to the principle of first removing all diseased tissue before X-ray treatment in operable cases. The X-rays have demonstrated their power to alter the character of malignant cells, to prevent their spread and development, and to produce retrograde changes that result in fatty and cystic degeneration or absorption, and often terminate in a restoration of the affected part to a nearly normal state. As a result of this, the palliative treatment in some apparently hopeless cases has resulted in partial cure. In others the progress of the disease is checked, pain is relieved, and external lesions partially or entirely removed. To obtain these results careful individual study of cases is necessary and the attack must be made as vigorous as the surrounding tissues will permit. The greatest difficulty is to determine the maximum dose that can be stood. Expert technic is just as essential in these cases as it is in cases for diagnosis. The results are very encouraging, no other measure affording so much relief.

The Roentgen Ray in Therapeutics.—Dr. Mihran K. Kassabian, of Philadelphia, compared the results of operative and X-ray treatment in various types of cases.

Many instances of failure should be attributed to lack of knowledge of the operator, instead of lack of power of the rays. Kassabian emphasized the need of closer cooperation between physicians and surgeons in the use of X-rays.

Some Problems in Surgical Work.—Dr. G. D. Nutt, of Williamsport, grouped these problems under the following heads: (1) Young surgeons should thoroughly know the practice of medicine and be capable diagnosticians; (2) there is greater need of integrity and professional honor; (3) more careful attention should be paid to technic and to reparatory work, in order to prevent deformities and dangerous sequences. This is particularly true regarding operations on the hands and fingers. (4) Better results and less deformity should be attained in the treatment of fractures. (5) In abdominal work, not done under conditions of emergency, remember the reparative powers of nature. (6) Exploratory incision should never be employed until all other means of diagnosis have been exhausted.

Proctocolitis, with Special Reference to Treatment.—Dr. W. M. Beach, of Pittsburg, reached the following conclusions: (1) Proctocolitis attacks both old and young, and is more common in the male. (2) The essential symptoms are pain, constipation and membrane formation. (3) In diagnosis there must be eliminated appendicitis, malignant disease and diseases of the pelvis. (4) Acute bacillary dysentery and the neuro-arthritic diathesis must be reckoned as causes. (5) Complications may be ptosis of abdominal viscera, appendicitis and tumors. (6) Diet should be limited to soft foods, milk being the standard aliment. (7) Medicines should be selected and used with great care. (8) Washing out of the colon should be employed in addition to other measures.

Abdominal Surgery without Ligature.—Dr. A. J. Downes, of Philadelphia, briefly described the technic of electrothermic hemostasis and spoke of the uniformly good results being obtained from its use, both by himself and others. Charts showing the steps in various operations were exhibited.

The Modern Treatment of Fractures with Special Reference to the Lower End of the Humerus and Bones of the Leg.—Dr. H. S. McConnell, of New Brighton, attributes much of the bad treatment of fractures to the faulty teaching of surgery and anatomy by the medical colleges. A prominent point to be remembered in the treatment of fractures is that after they are adjusted, muscular contraction alone is responsible for displacement. Hence, if proper reduction be accomplished tight bandaging is unnecessary. Fractures of the lower end of the humerus should be dressed in extension. The use of absorbent cotton in an emergency showed McConnell that this was the best material for retaining fractures in a child. Several layers are covered with gauze to form a splint. Good results have been obtained in 15 cases treated in this manner. For fractures of the leg the old fracture box is a relic of barbarism. A temporary posterior splint is followed by plaster-of-Paris dressing, for making which minute directions were given. Passive motion in fractures near a joint is not begun under two weeks, as no joint becomes anchylosed from forced rest due to fracture. In treating fractures, restoration of function and maintenance of symmetry are the two points to be observed. They are to be attained with the most comfort to the patient and the least annoyance to the surgeon.

Surgical Treatment of Recent Fracture of the Patella.—Dr. Edward Martin, of Philadelphia, thus summarized indications for treatment: (1) Conservative treatment applicable to blow or tear fractures in which separation is not more than one-half inch when the knee is flexed at a right angle and in which there is no joint tension, consists of fixation for ten days, approximation of fragments by adhesive strips, the use of an elastic bandage, massage, and passive motion. (2) All fractures accompanied by conspicuous joint tension should be treated by the open method. (3) When separation of fragments is more than one-half inch, the open method should be employed. The fragments of bone should be united by silver wire, the tendinous expansions by mattress suture.

Gynecological Therapy—A Plea for Operative Conservatism.—Dr. Chas. F. Spangler, of Kane, referred to the common operative excesses practised in cases of uterine, tubal, and ovarian neoplasms of benign nature. He deprecates the sacrifice of the adnexæ for painful but otherwise harmless lesions. Repair of the cervix and vaginal walls when hyperplastic metritis is the predominant lesion comes under the same category. The paper included remarks on the management of office patients and treatment of various lesions.

Obstetric Experiences of a Country Physician.—Dr. H. C. McKinley, of Somerset, related the histories of nine cases occurring in his obstetric practice. One was the accidental performance of a symphysiotomy by means of forceps during an instrumental delivery.

Retrodisplacements of the Uterus.—Dr. J. M. Baldy, of Philadelphia, said that retrodisplacement of the uterus is no more a distinct disease than is ascites in cirrhosis of the liver. Cases in which displacement is the only thing to explain the symptoms complained of by the patient and in which replacement cures the symptoms are very rare. They are, in short, the exceptions. The rule is that retrodisplacement of the uterus is coincident with other lesions and where such is the case the symptoms almost universally come from the associated disease. Inflammatory disease of the pelvis is most commonly the associated lesion and often causes the displacement. The latter may exist for years without causing symptoms, even when there is prolapse of the ovaries. Eventually distress may arise from these conditions, marriage often causing the ovaries, not the uterus, to give trouble. As to treatment, Baldy believes that the Alexander operation, ventrosuspension, hysterorrhaphy, and similar operations will soon be relegated to the list of obsolete operations. All indications are fulfilled by intra-abdominal operations upon the round ligaments. These do not interfere with pregnancy. It would be better for women if the profession forgot that there is such an appliance as the pessary.

Pathology and Treatment of Empyema.—Dr. P. Y. Eisenberg, of Norristown, said that the indications in empyema were free evacuation, irrigation, and continuous drainage. After an opening is made over the lower portion of the pus cavity, irrigation is as essential as in a pus cavity anywhere else in the body. To incise and drain or to resect a rib only is a halfway and unsurgical measure. When the lung is adherent, irrigation is not likely to produce deleterious effects. Cases thus treated were reported. Irrigation is practised at first daily, later every second day.

Some of the More Unfrequent Causes of Obstruction of the Common Bile Duct.—Dr. L. J. Hammond, of Philadelphia, spoke of the occurrence of fibroid thickening of structures around the common duct with adhesions to the head of the pancreas as a cause of obstruction. More stress was laid upon the enlargement of the lymphatic glands in the region of the duct as a cause of obstruction. One obscure case was detailed at length. Operation revealed great enlargement of the glands, this causing a kink in the duct with resulting obstruction. Lymphatic infection was supposed to have come from the pleura. Removal of the glands with prolonged drainage of the gall-bladder caused satisfactory recovery. In the event of adhesions,

which are usually diagnosed by incision, relief of the bands usually is followed by prompt recovery.

Surgical Treatment of Ascites Due to Cirrhosis of the Liver.—Dr. H. B. Allyn, of Philadelphia, reviewed the literature of this subject, adding 10 cases to those hitherto tabulated. These statistics are not particularly favorable to operation. The case reported by Allyn was a man of sixty-two years, an alcoholic. Repeated tapping gave no permanent relief. Through a misunderstanding the man was transferred to the surgical ward and operated upon. He died ten days later of exhaustion. The point emphasized by Allyn was that a careful study of the strength of the patient should be made before operation is undertaken. If there is serious doubt regarding his ability to survive the operation long enough for the formation of a collateral circulation, then operation should not be performed under any circumstances.

Pulmonary Phthisis.—Dr. Thos. J. Mays, of Philadelphia, presented a paper made up largely of statistics to show the inefficiency of efforts for the prevention of tuberculosis. Numerous charts based on the returns from 20 of the large cities of the United States showed the comparative frequency of tuberculosis and pneumonia. The point emphasized was that in prevention localities, though there was in some instances a decrease in the mortality from tuberculosis, there was a corresponding rise in the mortality from pneumonia. This points to the conclusion that cases are transferred from one class to the other. In many of the cities even the death rate from tuberculosis has increased. On the whole, Mays believes that the present efforts for the prevention of pulmonary tuberculosis are not furnishing desired results.

The Prevention of Pulmonary Tuberculosis.—Dr. Lawrence F. Flick, of Philadelphia, before speaking on this topic referred to some of the statements made by Dr. Mays, and explained some apparent discrepancies of statistics. Regarding the apparent increase in some localities during recent years, Dr. Flick said that this could be explained by better means of diagnosis or rather the use of better means. During the past five years laboratories have been opened in different cities and more accurate diagnosis is possible. Hence more cases of tuberculosis are classed as such. In Philadelphia there was an increase between 1894 and 1902. At the same time there is in all the localities mentioned a decrease in the number of deaths of those who actually have tuberculosis.

Formerly bronchitis was accepted as a cause of death. Now such cases are classed either as pneumonia or tuberculosis, thus increasing the list of both. Statistics are thus seen to be misleading unless all the conditions underlying them are taken into account. Wherever preventive measures against tuberculosis have been introduced there has been an actual decrease in the death rate. Prevention of tuberculosis demands two things: (1) Sanatoria for incipient cases. There is no contagion in this stage. Hence removal of such cases to sanatoria means probable cure and it also means the prevention of them becoming a danger to those around them as they would later. (2) Hospitals for advanced cases to prevent contagion. If these cannot be secured it is practicable to set apart wards possible of isolation in public hospitals. (3) Dispensaries can do much for walking cases, both in benefiting them and preventing harm to others. A point emphasized by Dr. Flick was, that practising physicians can do much in the case of patients at their homes if they are willing to take the time to plan carefully the patient's actions. They must be given minute directions about eating, sleeping, disposal of sputum, etc., and only the most careful attention to details will be productive of success.

The Serum Therapy of Tuberculosis.—Dr. M. P. Ravenel, of Philadelphia, reviewed the various efforts that have been made to secure a successful serum for the treatment of tuberculosis. The only way now feasible seems to be the production of artificial immunization of animals and the use of the antibodies thus formed for the disease in man. The question of bacteriolytic immunity has also attained importance in recent years. Some varieties of the tubercle bacillus have been made to produce vaccinal immunity, a fact indicating the genetic relation of all the varieties. The most encouraging part of Dr. Ravenel's address was the strong hope he extends for the future. With the possibility of the immunization of animals realized that of man can be expected to follow.

Trauma—An Etiological Factor in Phthisis Pulmonalis.—Dr. W. T. English, of Pittsburg, spoke of the influence of trauma upon the chest in causing pulmonary tuberculosis. This influence is particularly marked in older persons with rigid walls. The greater death rate from tuberculosis in certain parts of cities where the people, mill workers, for instance, were subjected to trauma was pointed out. The writer was able to cite 148 cases of traumatic pneumonia in which 48 per cent. were followed by tuberculosis. The most radical statement made by the writer was that pulmonary tuberculosis following an injury to the chest should be made actionable at law.

Dr. Flick, in discussing these papers, said that trauma had only a secondary relation to pulmonary tuberculosis, in that it predisposed to any lesion by lowering resistance, as does trauma of any part of the body. In his opinion no person is entitled to damages because trauma of the chest is followed by tuberculosis. In all instances, probably, tuberculosis was present before the injury.

Four Cases of Malignant Disease of the Lungs.—Dr. J. C. Lange, of Pittsburg, reported these cases, which he had seen in consultation. Two were in males and two in females, the ages of the patients ranging from twelve to seventy-two years. Microscopical examination showed sarcoma and fibrosarcoma respectively in two of them. The others were not examined, one presumably being a lymphosarcoma. The clinical features of these cases were very instructive. The late appearance of symptoms referable to the chest was notable. In all of the cases evidences of cachexia were present for some time without apparent cause. Debility, anemia, loss of weight, peculiar color, etc., were noticed from one to twelve months in the various cases before symptoms of chest disease began. The pleurisy that finally accompanied the lesion was in each instance dry in type. When the pleura became involved intense pain set in and persisted until the recovery of the patient. This persistence is considered of much diagnostic importance. The most characteristic physical sign was dulness on percussion.

Drugs Useful in Cardiac Affections.—Dr. S. Solis Cohen, of Philadelphia, after speaking of the necessity for considering the portion of the heart—muscle, valves, nerve supply—that is involved, mentioned the inutility of drugs as compared with other remedial measures in the treatment of cardiac affections. Among the latter are diet, exercise, hydrotherapy, massage, etc. When drugs must be employed digitalis is yet the royal drug. But it is practically always harmful, especially when there is fibrous change in the vessels, unless controlled by the use of nitroglycerin. The condition of the heart muscle and of the vessels are always of more importance from a therapeutic standpoint than is the condition of the valves. When the heart has undergone more or less fibroid change digitalis will do much harm and the use of nitroglycerin will accomplish much good. A

drug that will give very good results in these cases is mercury in some of its numerous forms. Small doses should be given. Potassium iodide in the dose of 1 to 1½ grains three times daily will also prove beneficial. Minute doses of the latter drug are also of use in cases of tobacco heart.

Dr. W. C. State, of York, in the discussion, said he had observed that men who work in nitroglycerin factories are very much affected by that substance, for a few days at first, but in three or four days this passes off and they do not afterward show its effect. He believes that laboratory statements as to its effect are correct but if it is employed continuously it will be of little use.

Dr. Cohen said he had no knowledge of workers in factories, but the effect of the drug could be easily tested in persons who had taken it for a long time. Omit its use and very quickly the original symptoms will reappear. In mitral stenosis aconite is often a very satisfactory drug.

A Fatal Case of Chorea Complicated by Endocarditis, Pericarditis and Nephritis.—Dr. A. A. Eshner, of Philadelphia, reported this interesting case. The patient was a girl of ten years, who presented the ordinary symptoms of chorea. Treatment was effective for a time, but a severe fright received by the child was followed by an exacerbation, during which in addition to endocarditis noticed before, there appeared pericarditis and nephritis; death finally terminating the scene. The case is instructive because of the presence of myocarditis, nephritis and anemia instead of rheumatoid symptoms. Endocarditis is fairly common in cases of chorea, pericarditis less common and nephritis still more rare. Their occurrence suggests that they are perhaps the varied results of a common cause. Dr. Eshner believes that chorea is an infectious disease not related to rheumatism. Cases similar to the one reported indicate that it may have a multiple cause.

Election of Officers.—The annual election resulted as follows: President, Dr. W. C. Ulrich, of Chester; Vice-Presidents, Drs. I. C. Gable, York; P. Y. Eisenberg, Norristown; F. W. Coover, Harrisburg; W. A. Marsh, Mt. Pleasant; Secretary, Dr. C. L. Stevens, Athens; Assistant Secretary, Dr. T. B. Appel, Lancaster; Treasurer, Dr. G. W. Wagoner, Johnstown. The last three were re-elections. Pittsburg was selected as the place for holding the meeting of the Society in 1904. A resolution to hold the future meetings of the society alternately in Philadelphia, Harrisburg and Pittsburg was referred to a committee.

(To be Continued.)

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Sixteenth Annual Meeting, held in Chicago, September 22, 23 and 24, 1903.

The Association met in the Northwestern University Medical School, under the Presidency of Dr. L. H. Dunning, of Indianapolis, Ind.

Dr. William A. Evans, of Chicago, delivered an address of welcome on behalf of the local medical profession, which was responded to by President Dunning.

After a short executive session, the reading of papers was proceeded with.

The Relation of the Colon to Abdominal Tumors.—A paper with this title was read by Dr. James F. Baldwin, of Columbus, Ohio. The colon, while it was quite movable, had its mesocolon well fixed to the abdominal parietes. By inflating the colon, when necessary, by pumping air in at the anus, its relationship to abdominal tumors could be quite definitely determined, and this relationship would enable an accurate diagnosis of the tumor to be made in many cases in which such diagnosis would otherwise be impossible. This was particularly true in differentiating tumors of the spleen, pancreas, kidneys, liver, including the gall-bladder, etc., from tumors originating in the pelvis or in connection with the small intestine and mesentery.

Dr. J. Henry Carstens, of Detroit, Mich., mentioned a spleen case with long pedicle. The spleen was attached to the posterior cul-de-sac; the woman had a number of fibroid tumors. He thought the spleen was a part of one of the tumors. He found the spleen, which had been floating, had become attached, so that the colon was in its normal position as in a case of fibroid tumor. He had seen a cyst of the kidney which was attached to the left side and had extended down into the pelvis, pushing the colon and everything on to the right side, so that it was impossible to differentiate it from a cyst of the ovary.

Dr. L. H. Dunning, of Indianapolis, Ind., recently encountered an echinococcus cyst of the pancreas, which was freely movable, and situated at the outer extremity of the pancreas. It sprang from the pancreas, developing far off to the side, pushing the colon away from its normal position, the descending part of the cyst being behind the colon, so that he thought it might be a cyst of the kidney. Believing it was a cyst of the kidney, before beginning operation he inserted a needle into it, but no fluid was obtained. The tumor had been present for a year and a half. The abdomen was then opened, and a cyst of the pancreas found. The cyst developed between the transverse colon, the stomach, and the lesser peritoneal cavity. It was as large as a child's head.

Dr. Baldwin, in closing the discussion, said that in 95 per cent. of the cases tumors of the pancreas appeared above the transverse colon; if at the tail of the pancreas, partly to one side; if at the head, to the other side; while tumors of the kidney appeared behind the colon. A tumor of the suprarenal capsule might be mistaken for a tumor of the tail of the pancreas, but not of the kidney substance itself, if the colon was fully distended.

The Value of Vaginal Cæsarean Section, With Report of Two Cases.—Dr. M. Stamm, of Fremont, Ohio, read a paper on this subject. He stated that to Duhrssen, of Berlin, the credit was due for having introduced this valuable method into practice. The clinical reports of operations undertaken on various indications spoke favorably of this method. The indications for this operation, as given by Duhrssen, were: "(1) Abnormal conditions of the cervix and lower segment of the uterus (carcinoma, myoma, rigidity, stenosis, partial pouch-like distention of the lower uterine portion). (2) Dangerous conditions of the mother which may be removed or relieved by prompt emptying of the uterus; affections of the heart, lungs and kidneys. (3) Conditions of the mother where death is imminent and can be foreseen." The last two indications had only value in cases where the cervix was closed and not dilatable, or where the depressing influence of labor pains should be obviated, as in affections of the heart and lungs. In pregnancy complicated with cancer of the uterus Duhrssen advocated immediate vaginal section, with subsequent extirpation of the uterus, no matter at what time of pregnancy or at what stage of labor this condition was encountered. Duhrssen's mode of procedure was described by the essayist.

The essayist stated that there were over sixty cases of vaginal Cæsarean section reported so far. The majority of these were undertaken for cancer of the uterus, but the number performed for puerperal convulsions was also increasing rapidly, and this trouble would furnish the chief indication for such an operation in the

future. Most authorities were agreed that rapid delivery was the most important measure to reduce the mortality in eclampsia. He also suggested the rapid dilatation with Bossi's dilator or similar instrument, where the extent of incision or laceration was under better control and where the wound gave more promise of healing by primary union. The operative technic was described. He had done vaginal Cæsarean section in two cases, with favorable results.

The Limitations of Cæsarean Section.—In a paper on this subject, Dr. E. Gustav Zinke, of Cincinnati, Ohio, stated that the basis of his paper was an analysis of 88 Cæsarean sections, including 8 Porro operations, which had been reported by fifty-two different authors since January, 1900. The causes for which the operation was performed were, in the order of their frequency, as follows:

For pelvic deformity	28 times.
Namely flat rachitic pelvis, 13; uniformly contracted and rachitic pelvis, 7; irregularly contracted, rachitic pelvis, 4; flat rachitic pelvis complicated by eclampsia, 3; flat rachitic pelvis complicated by tumor, 1.	
For justo-minor or uniformly contracted pelvis	12 times.
For fibroid tumors obstructing labor	11 "
For eclampsia	6 "
For hysteropexy	6 "
For cicatricial contractions of vagina	5 "
For causes not stated	4 "
For simple disproportion between fetal head and pelvis, and lack of expulsive power	3 "
For carcinoma of cervix	3 "
For carcinoma of rectum	2 "
For placenta previa	2 "
For retrodisplacement, impaction and adhesion of fundus	2 "
For gunshot passing through gravid uterus	1 "
For ovarian tumor obstructing labor	1 "
For threatened rupture of uterus	1 "
For congenital displacement of kidney	1 "
	88 times.

Among the 13 cases of flat rachitic pelvis was Coakley's case in which the operation was done three times in 6½ years, and Ill's case in which the operation was done twice in one year. Of these 88 cases, 66 mothers and 56 children lived. In 7 instances, however, it was not stated whether the mother lived or died, and in 13 the same information was wanting as to the child. In the consideration of the maternal and fetal mortality, the cases where there was no reference as to the result to the mother and child, were excluded. Thus it was found that out of 81 mothers, 66 lived—81.5 per cent. Again, it was found that the cause of death in 5 of the mothers was really due to malignant disease, and the patients recovered from the effects of the operation, death taking place two months, four months, one year and two years, respectively, after the operation. Counting these five cases as recoveries, 71, not 66, mothers lived. Maternal mortality, 12.34 per cent. Of the 90 children born, 56 lived. If the 13 cases were excluded where the result as to the child had been omitted, the fetal mortality amounted to 49 per cent. But a careful study of all cases revealed the fact that three of the children were dead before the operation; two succumbed during the operation; 7 died within twenty-four hours; four within forty-eight hours. Three lived two weeks, and one died of enteritis at the end of three months. If we add to the list of children surviving the operation those who lived twenty-four hours and over, fifteen in all, the immediate fetal mortality was reduced to 25.26 per cent.

The principal object of the paper was to determine as accurately as possible the limits of the sphere of usefulness of Cæsarean section in the light of recent advances in operative obstetrics and for the sole purpose of obtaining the best results for both mother and child under the most trying circumstances.

When two years ago the author advocated the adoption of Cæsarean section for certain cases of central placenta previa, there was quite a marked opposition, and but few supported the speaker in his recommendation of the operation for this always alarming obstetric complication. Much had been said and written against it since, and still to-day nearly every new text-book on obstetrics and other recognized authorities on this subject admitted that Cæsarean section might be justifiable under favorable conditions in the class of cases of placenta previa then referred to.

Dr. Charles S. Bacon, of Chicago, said he believed the operation to which Dr. Stamm had called attention was really a valuable addition to our means of treating certain cases. The history of the operation showed that it had been developed in the right way. This operation was not adopted with great enthusiasm at first, but gradually it had become more popular, particularly for the indication for which it was first employed, namely, cancer of the uterus. It was undoubtedly of great value, and also in cases where Cæsarean section was indicated for other reasons, when there was no contraction of the pelvis, and no sepsis. In cases of premature detachment of the placenta, a complication which defied all reasonable treatment, the operation seemed to be an appropriate one. In placenta previa, however, there would be the same objection that had always obtained in regard to the typical operation. The other means of treating placenta previa were so perfect, so far as the mother was concerned, that it would only be in the case of a very competent operator, and in probably rare instances, that this operation or the typical one would be chosen. When we came to puerperal eclampsia, there was ground for either one of the operations. He believed that there was a future for the vaginal operation in cases of puerperal eclampsia, particularly those that were very carefully selected.

Dr. Walter B. Dorsett, of St. Louis, said only a few days ago he encountered a case of placenta previa in a woman who was six months pregnant, and who, through a fall, began to lose amniotic fluid. She lost a great deal of blood. In making an examination he found placenta previa lateralis, with possibly an inch of the margin of the placenta grown to the edge of the cervix. Having been called without any opportunity to pack his grip, he tamponned as quickly as he could, and within five or six hours after he got to the house he made incisions anteriorly, posteriorly, and laterally, and delivered a child six months and ten days old. The first week thereafter the child gained five and a quarter ounces. It was a small baby. He gathered from what the essayist, Dr. Stamm, had said, that these operations were advocated more particularly in cases of malignant disease of the cervix than for placenta previa, but his experience with placenta previa cases led him to believe that possibly it was more applicable in placenta previa cases than in cancerous disease.

Dr. Frederick Blume, of Pittsburg, asked Dr. Dorsett whether he would advise incision of the cervix in cases of six months' gestation in which there was placenta previa, and whether he would practice it in every case.

Dr. Dorsett replied that he would in every case of placenta previa, with the experience he had had with this case.

Dr. Edwin Ricketts, of Cincinnati, said that before the anterior and posterior incisions were resorted to, it was wise to administer veratrum in such doses as

were prescribed at the present time, in cases of puerperal eclampsia.

Dr. J. Henry Carstens said, in reference to the first paper, that when the gynecologist encountered a contracted pelvis, vaginal section was out of the question unless it was a case of five or six months' pregnancy. Where a woman had had a convulsion, and then recovered consciousness, such a case required premature slow delivery. In a case of cancer in which the disease was adherent to the pelvis, rectum and bladder, it required Cæsarean section, as advocated by Dr. Zinke.

Dr. Rufus B. Hall, of Cincinnati, emphasized the importance of doing Cæsarean section early, in order to guard against the danger of infection or sepsis. He cited a case in point.

Dr. Charles L. Bonifield, of Cincinnati, said that vaginal Cæsarean section was certainly valuable in those cases where there was danger of infection in doing the suprapubic operation.

Dr. James F. Baldwin, of Columbus, Ohio, said that since 1900 he had made five, possibly six, Cæsarean sections without maternal or fetal death. He heartily concurred in the statements enunciated by Dr. Zinke.

The Gilliam Operation: A Clinical Contribution.—Dr. Edward J. Ill, of Newark, N. J., followed with a paper on this subject. The author had done Gilliam's operation 86 times since the author described it three years ago. In other words, he had done it in 68 per cent. of all cases operated on for retrodisplacements. There were no deaths. Fifty-one of these cases had reported themselves as entirely well, six as markedly improved, and four as no better. Seven had become pregnant, and two had given birth to children normally. Only one of the four reported as no better had a relapse of the malposition. This one was operated on again and an atrophy of the distal end of the round ligament discovered.

The writer had modified Dr. Gilliam's operation by not piercing the whole abdominal wall, fearing a weakness from which hernia might result. He would separate the rectus abdominis from its anterior sheath and pierce the rectus muscle, the inner sheath, and the perineum, and progress, as taught by Dr. Gilliam, fastening, however, the round ligament to the posterior surface of the anterior sheath of the rectus muscle with chromicized catgut, thus leaving a strong fascia intact.

Dr. Herman E. Hayd, of Buffalo, said the paper naturally brought up the subject as to whether it was necessary to open the abdominal cavity for uncomplicated retroversion. If one had a complicated condition of affairs, such as an adherent retroverted uterus, diseased tubes and ovaries, with probably diseased appendages, then it was all right to open the peritoneal cavity by the Dudley, the Mann, or any other method, although there was great danger attending it. It was not a question of mortality altogether, but of future complications, because as the result of opening this cavity adhesions would take place. One might get an adhesive inflammation of the bowel to the parietal wall, and as a result these future complications required subsequently radical operations. He had been compelled to open the abdominal cavity and operate for obstruction of the bowels in three cases simply from an operation in which he had opened the peritoneal cavity and did conservative work on the tubes and ovaries.

Dr. Albert Goldspohn, of Chicago, regarded the Gilliam operation as the next best thing to the Alexander for shortening the round ligaments, provided all of the indications could not be met through the inguinal canal. No operation, aside from shortening of the round ligaments through the inguinal canal, the so-called Alexander operation, had such a column of cases collected that had stood what he called the double test of pregnancy as had the Alexander.

Dr. D. Tod Gilliam, of Columbus, Ohio, said that the results of pregnancy following this operation were gratifying to him as they must be to anyone who had adopted the method. He was receiving reports from medical men all over the country with reference to the occurrence of pregnancy after this operation, and with one or two exceptions the patients had passed through pregnancy without any more trouble than under ordinary circumstances.

Analysis of Common Causes of Death Following Pelvic and Abdominal Operations.—In a paper on this subject, Dr. Joseph Price, of Philadelphia, said that he had selected this topic not because he had had a high mortality, but for the reason that it was one of great interest to the members. He said he had written several papers on postoperative complications and several upon repeated operations in incomplete abdominal procedures. This was the class of cases that perplexed him more and more as he grew older, and gave him the only mortality he met with nowadays. Recently he had had a number of trying and sad experiences. In one case, a patient came from a prominent hospital after a very simple but incomplete operation, where the operator had only partially removed one pathological ovary and tube, leaving the organs on the other side in a badly diseased state. She was sent to him some four months following this incomplete procedure, emaciated, septic, and suffering acutely. He opened the abdomen and found a strongly adherent bowel and omentum. The consolidation of everything made him strongly suspicious of what he would find below. The viscera freed, he found a huge four-foot gauze towel anterior to the uterus, the towel and pus pushing the uterus well back. The stench contaminated the hospital in a few seconds. This patient lived but a few hours, her death being the only one in the hospital in a long series, greatly distressing the operator, nurses, and all concerned. Postoperative sequelæ and deaths from gauze were very common. He was satisfied that they were thrice more common than from sponges. For a number of years he used sponges and valued them for clean work, for packing, or for a dry operation, and he believed viscera troubled him less than at the present time. He was then wholly ignorant of postoperative sepsis in his own work, and in that of his pupils. Had he now the time to take care of his sponges, he would go back to them, as highly as he valued gauze. To his mind it was one of the most valuable materials in surgery. He spoke of the value of good nursing in the reduction of mortality rate. A number of good operators attributed their low mortality wholly to the use of gloves. One very scientific teacher asked him before putting on gloves, if he did not think 12 to 15 per cent. was a low mortality, taking the cases as they came? He replied, "No, too high." After adopting the gloves he reduced his death rate to about *nil*, but his precautions, said Dr. Price, were all redoubled. For example: After operating on a septic case, other operations were postponed for thirty-six to forty-eight hours. Again, in a study of the complications and pathology, in his reported cases, Dr. Price failed to find one which could have died from good surgery.

Recently a brilliant young surgeon assisted him in an operation for acute gangrenous and perforative appendicitis, with general septic peritonitis, the peritoneum charged and bathed in septic fluid. This case got a wash toilet and a coffer-dam drain; she never had a bad symptom. The young surgeon remarked that about all these cases died in his hands. In a splendidly appointed hospital, with which this young surgeon is con-

nected, the mortality was high in appendicitis operations. His reasons for alluding so fully to this subject were that the disease was so common and the death rate so high. Vaginal incisions and perforations favored a high mortality in later operations, made for the clean removal of the remaining pelvic pathology. Puriform tubes and ovaries, suppurating tubes and ectopic pregnancy, seldom allowed sufficient improvement in vital force and stamina to bear well the complete operation—suprapubic—after they had been incised through the vagina. Primarily they would all have been easy by complete methods, and without mortality. The choice of method and material was of paramount importance to good work, and the suprapubic procedures, when complete and done early, drainage used when necessary, should, like the infrapubic, when done by one of the finished operators, like Jacobs, Ségond, or Pryor, give a mortality close to *nil*. He had done a large number of vaginal hysterectomies for malignancy of the uterus, cervix or fundus, and for small fibroids, without a death, and it was one of the easiest operations he was asked to do. In suppurative forms of tubal and ovarian disease he did not consider the vaginal route complete surgery, because the adherent omental and bowel adhesions and the diseased appendix were wholly neglected.

Report of a Fourth Consecutive Successful Operation for Acute Perforated Gastric Ulcer, With General Infection of the Peritoneal Cavity.—Dr. H. Howitt, of Guelph, Ont., presented a paper on this subject. Acute gastric ulcer perforation, as understood by him, referred to those cases in which nature failed to prevent the escape of gas, liquid or other contents of the stomach by adhesion of the part to adjacent structures.

In reference to successful treatment, attention was called to the importance of early diagnosis and prompt action on the part of the surgeon. He believed that the diagnosis should be made without difficulty when the perforation occurred in a young, anemic girl, who had a previous history which indicated the presence of an ulcer, and that it should not be difficult in the majority of the other cases, for there was generally a history of after-meals gastric distress, and frequently other symptoms to indicate the trouble. With or without such previous history, the sudden onset of intense pain in the epigastric region, the pronounced shock, the rigidity of the abdominal wall and the thoracic character of the respiratory movements aided in arriving at a correct conclusion; and, if in addition to these the initial pain radiated in a certain direction, and the position of greatest suffering changed and gradually took a downward course in the abdomen, the diagnosis might be made without delay. In the rare instances of rupture of the gall-bladder or perforation of the duodenum in which the symptoms closely resembled those of gastric perforation, the indications for prompt surgical treatment were practically the same. In perforation of the anterior wall to the left of the median line, the material, and consequently the pain, followed a course along the inner side of the descending colon. In all other situations along the descending colon toward the pelvis.

Dr. Howitt favored a large abdominal incision, collapse of distended intestines by temporary enterotomy, and evisceration, with proper provision to keep the exposed parts warm and moist. Distention of the bowels was the general rule in these cases. The administration of morphine in the early stage, before a diagnosis had been made, often prevented timely recognition and prompt action. It was the general practitioner who was first called, and until he became more familiar with the true import of the initial symptoms successful operations would not be common. He believed that the symptoms indicated the position of the ulcer in the stomach in a manner sufficiently definite for all practical requirements of the surgeon. Before perforation took place, when the ulcer approached the peritoneal coat, a local sensitive area of peritonitis was produced, and it was very sensitive to pressure or other form of irritation. Hence the posture of the patient was that which avoided pressure and kept the contents of the stomach away from the ulcer. For instance, when the ulcer was on the anterior wall, the patient was more comfortable when lying on the back, and so on, according to the position of it. When it was on the anterior wall, point pressure of a superficial character might, by causing severe pain, indicate the exact position. Whether caused by pressure, food or otherwise, the pain, when severe, tended to radiate in certain directions, according to the position of the ulcer. Thus, if near the pylorus and on the anterior wall, to the right, or to the right and downward. On other parts of the anterior wall, to the left and to left and upward to shoulder. On posterior wall, to back immediately behind its situation and to right or left, according to whether it was right or left of spinal column, and upward to interscapular space. In acute perforation of the stomach wall with distention of the bowels, the organ was collapsed and crowded on to the ribs and diaphragm in such a manner as to render it impossible for any surgeon to deal with the trouble without exposing more or less of the intestines. A large incision, collapse of the distending coils of intestines by temporary enterotomy and evisceration rendered the work easy and more expeditious, and with less damage to the delicate parts than was possible by any other method. When the perforation was large, drains were used in each flank, and in the pelvis, not through a large incision, but through separate stabs.

Besides a brief synopsis of each of his former operations already reported, the paper contained a report of his fourth case in which the perforation was on the anterior wall. It was closed with fine silk sutures. His method of sight inspection and flushing of all parts of the abdomen and pelvis with a large forcible stream and drainage was carried out. The patient recovered and was well to-day.

Should the Uterus and Ovaries be Removed in Operating for Double Pyosalpinx?—Dr. C. C. Frederick, of Buffalo, N. Y., read a paper on this subject. The history of operative procedures in the class of cases under discussion had passed through three well-defined periods. The operation, at first practised by Tait and his followers for several years, consisted in removing both the tube and ovary through the suprapubic incision, leaving the uterus. In making a pedicle common to both tube and ovary there was of necessity an incomplete removal of the tube, leaving in most cases a part of the proximal end. Many of them were cured and others were not cured, the failure being in many instances due to a continuance of the diseased process in that part of the tube remaining. Some of them who had undergone this incomplete operation were again operated; the uterus was removed, and in many cases a cure resulted. The natural inference was that the uterus was the offending organ which prevented cure after the first operation; hence arose the teaching that the uterus should be removed with the diseased tubes, in order to insure success. Then came the resort of the French school to vaginal operation for pus tubes, and then every vestige of uterus, tube and ovary was removed, whether it was necessary or not.

Learning by observation and being obliged to treat

these poor sufferers had gradually awakened in the minds of many operators a desire to prevent such results, and gynecologists should be gratified to see a return to abdominal section, with its possibilities of conservative surgery.

After an experience of about fifteen years with the various surgical procedures, and noting the effects of these operations, gynecologists were in a position to decide quite accurately the amount of pain, discomfort and illness due to disease of the various anatomical parts of the woman's sexual apparatus. As a result of these observations and deductions, it was not necessary to sacrifice all of these organs when they were not all hopelessly diseased. In other words, gynecologists were justified in removing nothing but those organs which were distinctly diseased, and they were in duty bound to retain for the woman all that were not diseased. He believed it could be stated as a surgical principle which could not be questioned, that the duty of the gynecologist, when consulted by a patient for operation, was to afford that patient the greatest possible relief from the symptoms complained of, with the least mutilation, and the preservation of every organ possible to enhance the most perfect performance of all bodily functions. The rule should be to save as much healthy ovarian tissue as possible, even if it be only the fourth or eighth part of one ovary. In some rare instances the uterus should be removed, but the occasion was rare. If the condition was known to be tuberculous, the uterus should certainly be removed. But even if both tubes and uterus were taken out, one should still preserve all the ovarian tissue possible. For the past five years he had been studying the results of leaving in healthy ovaries in those cases of fibroids needing hysterectomy. The results had been very satisfactory. He was thoroughly convinced that gynecologists had no right under any circumstances to sacrifice an ovary or any part of one which was not absolutely and incurably diseased. The uterus should not be removed if it could be retained. The surgeon should not remove any more ovarian tissue than necessary, but the tubes should be removed *in toto;* by so doing the surgeon would best fulfil his duty to his patient by making her a more perfect woman physically, mentally and physiologically.

This paper was discussed by Drs. Robert T. Morris, Rufus B. Hall, Walter B. Dorsett, Miles F. Porter, Byron Robinson, W. D. Haggard, Albert Goldspohn, E. C. Dudley, J. H. Carstens, Frederick Blume, John B. Murphy, Charles L. Bonifield, all of whom favored the conservation of as much ovarian tissue as possible in operating for pyosalpinx.

(To be Continued.)

BOOK REVIEW.

Practical Handbook of the Pathology of the Skin. An Introduction to the Histology, Pathology and Bacteriology of the Skin, with Special Reference to Technic. By J. M. H. Macleod, M.A., M.D., M.R.C.P., Assistant in the Dermatological Department, Charing Cross Hospital; Physician to the Skin Department, Victoria Hospital for Children. P. Blakiston's Son & Co., Philadelphia.

Now that this book has appeared it strikes one as curious that it should be the first in so important a field. Considering the ready availability for all sorts of examination which the skin displays and the terribly confused state of dermatology, particularly as regards nomenclature, it is surprising that no other book has been published dealing exclusively with the histology and pathology of the skin.

The author has stepped nobly into the breach, however, and given us a work which for completeness and perspicacity leaves little to be desired. The forty plates drawn by himself are models of clearness and free from the unnecessary detail which renders so many microphotographs useless for the student. The histology and embryology of the skin are very adequately described, together with an exposition of the laboratory methods necessary in the preparation of specimens of this tissue which in many particulars differ from those in general use. The epidermis is then taken up and all the lesions it exhibits are elaborated at great length, followed by a similar series of chapters on the corium, hair, sebaceous glands, sweat glands, blood-vessels, nails, pigment parasites, etc.

An important chapter is that on the pathology of the blood in skin diseases, which is assuming more and more importance as it is being studied more carefully.

The work should find a wide circle of readers and will no doubt stimulate the appearance of others on the same subject.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Clean Milk. By Dr. S. D. Belcher. 12mo, 146 pages. Illustrated. The Harvey Publishing Co., New York.

The Principles of Obstetrics. By Dr. S. P. Warren. 8vo, 373 pages. Illustrated. Wm. Wood & Co., New York.

Southern Surgical and Gynecological Transactions. Volume XV. 8vo, 444 pages. Illustrated. W. J. Dornan, Philadelphia.

Western Surgical and Gynecological Transactions. 1902. 8vo, 250 pages. Illustrated. American Medical Association Press.

First Principles of Otology. By Dr. Albert H. Buck. Second edition. 8vo, 216 pages. Illustrated. Wm. Wood & Co., New York.

International Clinics. Edited by Dr. A. O. J. Kelly. Volume II. Thirteenth Series. J. B. Lippincott Co., Philadelphia and London.

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ORIGINAL ARTICLES.

SYMPOSIUM: THE TEACHING OF THERAPEUTICS.*

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THE importance of this Symposium can hardly be overestimated. The day has come when something more is demanded of the practitioner or physician-consultant than a diagnosis. A mere diagnosis is not sufficient; an anatomical diagnosis broad enough to constitute a basis for a sound therapeutic procedure is imperative, and upon this complete diagnosis an intelligent therapy must be constructed. If we stop short of this, our full duty to the patient is not fulfilled. It is not sufficient that we shall say a given method or remedy has been employed under these conditions; our obligation will not be satisfied until general principles have been fitted to the particular patient. The *what* may be the easiest determined; the *how much*, the *when*, and *in what form* and *under what precautions*, must be fully stated.

I do not underrate the value of pathological knowledge, neither do I decry the importance of etiology or history, nor ignore the advantage of expert physical diagnosis, nor minimize the weight of trained and logical reasoning, nor deprecate the assumption of conclusions based on long-continued experience, all these are necessary for a diagnosis, but logic and learning and experience are in greatest demand that the fullest advantage may accrue to the patient when once the diagnosis is established. All else is to the patient's mind, and rightly so, introductory and subsidiary.

What can be done for the patient and how best to do it is the goal toward which our best efforts should be directed. The question is, How shall we teach the medical student so that he shall be best fitted to become a useful practitioner? That there is much room for improvement in our methods, has become more and more impressed upon me, during the nineteen years of my service at the New York Post-Graduate Medical School and Hospital, by the 8,500 graduated physicians who have attended the courses given at the institution during that period. They represent all phases of therapeutic belief and unbelief, but they have in common an earnest desire to acquire the ability to do more for their patients. They are dissatisfied with their present attainments, and wish above all things, practical instruction. Strange as it may seem to you in these days of surgical prowess and brilliant special achievements, the medical courses are those honored by the largest attendance, and of these, those dealing chiefly with therapeutics are the most frequented. Obviously, my problem is different from that which presents itself to the undergraduate Professor. My work is to compensate for deficiencies, to round out incomplete information, to carry the matriculant to the point of actual knowledge as it now obtains, and especially to demonstrate by deeds the value of up-to-date methods and measures. Naturally, therapeutics must be taught by demonstration and the results in ward and dispensary must be always open for inspection and verification. Instruments of precision, both in diagnosis and treatment, and the laboratories both chemical and biological, are absolutely essential. Skepticism and credulity must give way before rigid logic and the brute force of facts. This is the present aim of post-graduate therapeutic instruction: If it must needs be elementary at times, it is so from the necessities of those who demand it. That it is so is not the choice of the teachers. When by conference of teachers a definite plan shall be adopted which shall bring the undergraduate to his doctorate as properly equipped for treating as he is now for recognizing disease, then the post-graduate teacher can assume that a solid foundation has been laid and a superstructure crowned by expert work, safely attempted. Then, and not until then, will our work be post-graduate in fact as well as in name. While I have no intention of directing the opinions of the distinguished men who follow me in this symposium, because by methods varying considerably from each other they have turned out men whose knowledge has been broad and well-grounded, and also some who would not fall into this class, from my observation of the results of their efforts, I feel that a consensus of opinion is desirable. Not alone for ourselves are we now discussing this question, but doubtless what is said here will have an enormous influence upon teachers in schools not represented to-day. Particularly I would regard these topics as indicating causes of failure to obtain the best results in the past. (1) A practical acquaintance with various remedial physical measures and remedies, not less physiological, and methods of preparing the latter. This should be acquired during the early and mnemonic period of the student's career (recitation and demonstration). (2) Actual knowledge of the action of agencies and remedies acquired by personal experimentation and demonstration under the teacher's eye (laboratory demonstration). (3) Application of these agencies and remedies, the actuality of their effects for good or evil having been fixed in the student mind, in the treatment of diseases and symptoms, under proper supervision (lecture and clinical demonstration). (4) The accurate direction for the ex-

* Read before the American Therapeutic Society, at its Fourth Annual Meeting, at Washington, D. C., May 11, 1903.

hibition, in strict pharmacopeial nomenclature, of remedies and the scientific use of physical agencies must be so thoroughly comprehended by the student that he can not only intelligently apply them, but give valid reason for his treatment (clinical practice and conference).

These I believe to be fundamental and essential to intelligent practice, whether medical, surgical or special. How best to bring about this union of fact and mind which may express itself in the production of brilliant therapeutists, using the word in its broadest sense, is the problem which those who succeed n.e, will undoubtedly solve. The day of therapeutic nihilism is past; let us take full advantage of the times and, avoiding credulity, let us lay the foundation for therapeutic triumphs which now seem beyond the bounds of possibility.

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FROM PHARMACOLOGICAL SCIENCE TO THERAPEUTIC ART.*

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Without fear of contradiction it may be asserted that the one chief purpose of the medical college course is to fit men to become practitioners. This granted, it follows that the highest object to be sought in the development of the capabilities of the individual student must be in the direction of his ability to prevent and remove disease. To the attainment of this object, the substance and method of study must be adapted throughout; and the complexity of the curriculum and diversity of methods of every well-equipped school of to-day gives evidence of progress toward its realization.

No doubt the larger part of the progress of the past twenty-five years in medical education must be credited to pure science; for during this period we have seen the development of the science of bacteriology, the growth of pharmacology into a distinct science, the progress that has been made in the fields of physiological chemistry and in pathology; and we have seen also an increasing appreciation and application of the science of pedagogy. These advances have touched primarily the work of the first two years in medicine; and for our present purpose it will be taken for granted that the teaching of the first two years is better planned and better done than that of the last two years. Three reasons to support such belief may be given in passing: (1) The work of the earlier years is more definite in its character; (2) more teachers are giving their chief attention to teaching in these years; and (3) the student is doing more for himself in the various laboratories.

Our topic relates rather to the work of the third and fourth years. Recent discussion of methods of teaching in the senior year, by two of our most prominent teachers, shows that the question is up and that certain deficiencies are being appreciated. From the standpoint of therapeutics several criticisms are offered which apply to many, but not to all, schools and teachers:

1. Third and fourth year classes have lectures together, which means a minimizing of individual instruction and opportunity, and faulty adaptation to the needs of each class.

2. Clinical interest is allowed to center about pathology and diagnosis to the neglect of treatment.

3. Insufficient attention is given to the practical details of the application and prescription of remedies.

There is a natural but decided transition in the character and method of the work, as the student passes from the second to the third year. He appreciates this and we as teachers ought. The laboratory is replaced by the clinic and the recitation by the didactic lecture. The important point for us to recognize is, that with this transition there comes too often a subordination of the student's best abilities. In the laboratories he did the greater part of the work for himself, but now someone else has prepared it in pleasant form for him. He is interested and receptive, but assimilation and added mental power do not necessarily result. The deception, that because a lecture is understood and enjoyed it must be highly profitable, is still too prevalent.

Let us discuss the third and fourth years of therapeutics separately. The view-point from which to consider the work of the third year is that of a student well prepared in the fundamental sciences upon which medicine builds. He has a good working knowledge of anatomy, physiology, chemistry, bacteriology, materia medica and pharmacology, and considerable of pathology. He has a large amount of mental material to work with. Is he to be allowed to use it, or will he be asked to simply accumulate more facts? This, in the writer's opinion, is a question of very great importance. Up to this time there has not been much to call forth his reasoning faculties; but from now on, if the interests of his future usefulness are best served, his training will include a large element of the developmental. He is prepared to associate facts, to recognize principles and to form conclusions. He should be aided to use his abilities in these directions. Mind-training rather than fact-getting should be the object of the course in therapeutics in the third year.

Appreciating the importance of this view, we must secure a like appreciation, in order to co-operation, on the part of the student, before introducing him to work and methods so radically different from what has preceded.

The question now naturally follows, What shall constitute the third year course in therapeutics? I would answer, a careful development of the principles of treatment of all of the more important diseases, with a study in detail of the application to each, of the more important drugs. We may liken our student to a carpenter's ap-

* Read before the American Therapeutic Society at its Fourth Annual Meeting, at Washington, D. C., May 11, 1903.

prentice, who has learned the names of the various tools, and who knows what the saw and plane will do and what the hammer is for; but it is when he is brought before a building to be repaired, that he learns when to saw, where to plane down, and what to nail together. Similarly, the principles of treatment and the application of remedies can be best studied from the pathological side, *i.e.*, beginning with the diseased condition instead of with the drug.

How shall the course be conducted?

The didactic lecture, while it may be interesting, does not exact sufficient effort from the student, and it is likely to be too dogmatic.

The recitation from a text-book, while important earlier, is too narrow, mechanical and precise for our present purpose. The student has outgrown it.

The ideal method is that which is the most natural,—the conference, or may we say the Socratic, method, where the students and teacher meet for discussion. The writer has employed this method with third year students for the past five years, with the most satisfactory results in the direction sought.

Two hours per week are given to this conference course. The topic for a session is announced in advance. The discussion is given direction by questions asked by the teacher, but informality is invited. Any student is at liberty to ask a question or state an opinion at any time. Although a point is frequently thrown open to the class for discussion, or an appeal taken to the class for an opinion, usually not more than ten students have questions addressed to them individually during an hour. Marks are given to these, not only for facts known, but especially for ability to develop or reason out points in the discussion.

During the second half of the year one clinical hour per week is added, with the same developmental object in view, and is conducted as far as is possible by the same method, the cardinal principle being observed that whatever the student can do himself should not be done for him. The courses in pathology and practice are correlated with that in therapeutics, being preferably a little in advance of it in point of time.

In outlining the course, there is included a sufficiently extensive list of the principal diseases arranged by systems, *e.g.*, the respiratory, the circulatory and the digestive systems, to secure the development of the general principles of treatment, and to gain an intimate knowledge of the application of the most important remedies. Emphasis is placed upon indications for, and contra-indications to, the use of each drug. The natural and hygienic methods of treatment are given first place. No attempt is made to discuss all drugs. Probably fifty drugs are considered during the course, many of them a number of times, in their relations to the various diseases in their order. This begets a familiarity with the most important drugs and gives the student a proper sense of proportion in his estimates of medicinal values. Comparatively few new remedies are considered, the belief being that the time can best be given to the old well-known drugs.

What is the student expected to gain in such a course?

1. A self-acquired knowledge of principles of treatment.

2. The ability to weigh indications and contra-indications, and to reason out a rational plan of treatment for the case before him.

3. The relative importance of hygienic and medicinal treatment and of the various drugs employed.

4. A more intimate knowledge of the remedies of greatest importance, to the subordination of those of uncertain value.

5. An important mental training in the directions of his needs in actual practice.

If you will permit a comparison of methods, let us take the relation of stimulants to pneumonia. With the common method of teaching therapeutics, by didactic lecture and from the standpoint of the drug, digitalis, strychnine and ammonium carbonate will be discussed in order, their action reviewed, the range of doses given, and their value in pneumonia emphasized with proper discrimination and ability. But the class is studying drugs and their uses, not the treatment of pneumonia. The same class in practice will hear a scholarly discussion of pneumonia, with its etiology, clinical history, differential diagnosis, prognosis and treatment, all gone over in formal order. Treatment probably receives its share of the available time, depending in part upon the lecturer's view of its importance; but, coming last in order, it is too often cramped into a period of very brief discussion; and the study of drug treatment is apt to consist of such general statements as, that strychnine may be useful throughout as a stimulant to the central nervous system and the heart, that ammonium carbonate is useful as a diffusible stimulant to combat general or cardiac depression, and that digitalis is to be used only with a proper appreciation of its action and the precise indications present. And this is all proper, for remember that the lecture is upon the disease pneumonia, and treatment is only a part of its consideration.

The same class in clinic will see mild, or atypical, or convalescent cases of pneumonia. For obvious reasons little study can be made of the very severe cases, that most need the drugs mentioned. The history may show at a certain time, corresponding to certain indications upon the charts, that digitalis, strychnine, or ammonium carbonate, or all of them, were given. But the study of the application of these drugs to the disease is largely historical, and constitutes a minor feature of the case as a whole; and we know how largely clinical interest centers in pathology and diagnosis, to the neglect of a detailed discussion of treatment.

The point to which these observations lead is this: nowhere is the student required to use his own knowledge, and do his own reasoning, in

the development of the principles or details of treatment.

Now, in contrast, let us take the third year students soon after they have had the general lecture upon pneumonia and have studied its pathology. Calling forth from them the related facts of anatomy, physiology, etiology and pathology, as a basis, with their knowledge of the definite action of digitalis, strychnine and ammonium carbonate, let them, directed by the instructor's questions, develop the application of these drugs. They appreciate the conditions of structural change in the lungs and the important factor of toxemia, as furnishing their distinctive indications for drug treatment. And, very important, have them weigh contra-indications against indications in deciding for or against the employment of any certain drug. They thus come to independent conclusions as to when, in what dosage, and how long, the drug shall be used.

It is not claimed that this method can bring out any facts or ideas that cannot be given in a lecture, but it is insisted upon that the superiority of the method lies in the fact that the student, by use of knowledge previously acquired plus his reasoning powers, acquires the ideas by his own efforts and develops the details in his own mind, instead of being simply a receptive listener to their recital. He develops thinking and reasoning power of the kind he will need to use in the presence of every case in practice. Furthermore, the important mental work has to be done during the class hour and under the eye of the teacher, with the great advantage that faulty reasoning and unscientific and impractical views can be at once detected and corrected, as with no other method.

While clinical study is not absolutely essential in such a course, it is an advantage to be able frequently to illustrate a lesson by an actual case, or to develop the treatment in the presence of a case, provided features of incidental interest do not detract from the important lessons to be gained. In order to avoid this danger, I prefer that the regular course be without clinical cases. It is essential to have the students acquire a clear conception of the plan and object of the course, and not until they have entered into cooperation in its method of study, do I use much clinical material. But during the second semester, one clinical hour per week is valuable.

Passing now from the third to the fourth year, let us approach the final year's work from a somewhat different point of view. The student is now a beginner in practical medicine, possessed of a wealth of facts, with a fair knowledge of their relations and a trained ability to use them in the study of cases.

What shall his fourth year's work in therapeutics consist of? What does he most need? In finding an answer to these questions it will be helpful to consult the common deficiencies of the young practitioner in this special branch. In spite of his scientific attainments, the average young graduate begins practice with a sense of unpreparedness in the matter of adapting and prescribing remedies. He has come to a point where he realizes as never before, that abstract knowledge of drugs and their uses must be supplemented by something more. He feels a need that is as real as its means of supply is indefinite. From the experience of years we can tell him that the something that he feels the need of is the ability to adapt, apply, prescribe, and combine remedies to meet the case before him; in other words, he needs to learn the *art* of therapeutics. It may take him several years to make decided progress; meanwhile he meets with two factors that may influence his course of practice unfavorably. The first is a positive degree of skepticism in the profession as to the value of medicines; the second is the very extensive advertisement of commercial preparations.

He may be able to appreciate that the first can have no basis except insufficient knowledge, on the part of the skeptics, of the action of the really important drugs. He may be superior to his surroundings in that respect. But the second factor in his daily environment, that of the commercial preparations, with the souvenirs, elegant samples, and the tactful solicitor, is a menace to his proper growth.

It would be well if all who are engaged in educating physicians were to ponder the question, how the multiplying commercial houses are enabled to expend such large sums year after year in advertising their wares to the profession. The very fact is evidence that the rank and file of physicians are not confident of their own proficiency in the art of treatment, and that a goodly percentage are willing to have the business firms do their thinking for them, in the matter of what drugs they shall use, and how they shall be combined and administered. It is a sad reflection that the art and ethics of prescribing are small quantities in the practice of many physicians.

From the physician in practice let us look back to the student beginning his practical clinical work of the fourth year. The art of therapeutics cannot be a sudden acquisition. It must be gained by experience through a considerable space of time. But the learner will make much better progress under an instructor than alone; and he may as well begin with his fourth college year.

It is important that we fortify our students against the tendencies mentioned above, and particularly against the use of proprietary preparations; and all will agree that the best way to do this is to educate them above their use. It would be well if we could at this time get our students into the habit of reasoning out the treatment of every case they see.

A chief point then in the fourth year, from this point of view, should be to forestall the deficiencies that have been suggested. To this end two features should be given prominence: (1) The clinical sessions, whether in ward or lecture room, should include more of therapeutics. To ensure a proper balance, it is the writer's custom

to devote one hour per week, for at least one-half of the term, to clinical therapeutics, in which sufficient time is taken for a detailed discussion of the treatment of the cases presented. (2) The training of the student's own efforts in all that pertains to practical treatment is of the greatest value to him. It is not what can be demonstrated to him in the matter of methods, for these are easily learned, but what will exercise his mind in independent discrimination and judgment, as to methods and means to be employed in given cases, that needs the greater emphasis. During the third year his thought has been engaged largely with classes of cases, and with the composite or typical case of the class; now he studies individual cases in their variations. And his *therapeutics* of each case should be made just as special as the pathology. He must be led away from the idea of treatment of a class of diseases to the treatment of individual patients. He should learn that we can no more treat patients by classes than we can reform men by classes. Therefore, the emphasis must be continually upon the individual case.

It is not necessary that all the instruction be clinical in the ordinary sense of the word. The presentation of good cases historically, or of hypothetical cases, furnishes a good basis for the study of variations in disease, and the application of principles of treatment. As a distinct feature of fourth year therapeutics, the writer has come to value what may be called the prescription conference. In this exercise four students take their places at the blackboard. Nos. 1 and 3 are given one case, and 2 and 4 another, each one to work independently. The cases given are either actual cases which they have seen in the clinic or hypothetical cases, and each student is required to outline treatment and write one or more prescriptions to suit his case. The balance of the class are encouraged, at the same time, to do similar work in their note-books, and to prepare criticisms of the work upon the board.

A little reflection may be necessary to fully appreciate all that is involved in this method. In the first place, the exercise of outlining treatment of a definite case, to be subjected to criticism by the class, is a stimulus of the first order. In the second place, the writing of an extemporaneous prescription before the class, to be criticised in turn, is a tax upon the student's resources that can scarcely be equaled by any other method. It requires a review, in the student's mind, of his knowledge of the drugs that may be indicated, in order to a proper choice; it requires a recall of their leading preparations, their doses and incompatibles, in order to a proper combination; and it tends to neatness, correctness and attention to details, in the construction of the prescription.

Again, the class criticisms give opportunity for free discussion of all of these points and, in addition, of the indications and contra-indications as to the drugs prescribed, and of the general principles of treatment given. The instructor adds suggestions where necessary, correcting any errors not noticed by the class. Two special points that are strictly enforced are, the exclusive use of the metric system, and the exclusion of all proprietary formulas and copyrighted names.

The great advantage of such a course is, that it drills the student in the very things that he will need, and in the very way he will need them in his daily future work and practice.

In conclusion, the conviction is expressed that the developmental conference of the third year, and the practical prescription conference of the fourth, both supplemented by clinical therapeutics, will constitute a most important contribution to the development of the art of therapeutics upon a basis of pharmacology.

RECENT ADVANCES IN GENITO-URINARY SURGERY.*

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I AM appreciative of the cordial invitation of our President to read the genito-urinary paper before the annual meeting this year. In accordance with his specifications I have endeavored to select the salient advances and to include, somewhat in detail, the technic of certain more or less recently devised operations.

So far as I have been able to scan this ever-widening field, advances may be noted in surgery of the kidneys (with special reference to nephropexy and nephrolithiasis), and in surgery of the ureters and of the prostate; in the more medical aspects of the subject, advances may be noted on the hard fought ground of gonococcal infection of the urethra, in attempts at asepsis of the genito-urinary tract, and in means to determine the functional integrity of the kidneys.

Nephropexy.—This operation has received considerable attention because of many unsatisfactory results in spite of elaborate technic. Two explanations are at hand for these failures: (1) The kidney becomes immovably fixed or abnormally rotated and fixed; (2) the nephroptosis proves to be only a part of an unrecognized splanchnoptosis. Guiteras in a recent excellent article reviewing this operation shows that the majority of accepted methods to-day include an oblique lumbar incision, to a greater or less extent, and suture with absorbable material so introduced that it includes the reflected capsule with more or less parenchyma or none, and more or less of the muscle portion of the abdominal wall to the entire exclusion of the skin. By the following technic he obtains the permanent restitution of a kidney to practically its normal position without total loss

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of its normal rotation on its horizontal axis. Through a vertical incision one-half of only the posterior surface of the kidney is denuded, beginning at the convex border and stripping up the capsule toward the concave border. Two sutures of chromicized catgut, one at the junction of the upper and middle third, the other at the junction of the lower and middle third, are now passed through both the reflected and attached portions of the capsule close to the attached border formed by the reflection, then along it for three-quarters of an inch and out again. At the same levels two similar sutures for the anterior surface are passed by means of a blunt needle. Both of these anterior sutures begin under the cut margin of the capsule at the convex border and run at right angles to it under the capsule covering the anterior surface of the kidney for three-quarters of an inch. At this point they are brought out through the capsule, carried over its surface for three-quarters of an inch, parallel with the convex border, then under the capsule again and back at right angles to the cut margin and out from under it. The two upper sutures are then carried through the muscles and fasciæ just below the twelfth rib, three-quarters of an inch to the inner and outer side respectively of the incision through the muscles. Similarly the two lower sutures, at a level corresponding to their position in the kidney capsule. The wound through the muscles is then closed by interrupted sutures, after which the upper and lower posterior kidney sutures are tied singly, with enough traction to bring the posterior surface of the kidney firmly against the abdominal wall, while the upper and lower anterior sutures are tied with just enough traction to support the outer limit of the decapsulated area.

Another ingenious method is that published by B. B. Davis, in May, 1902. It consists in making two vertical flaps of the capsule on the posterior aspect of the kidney by means of a vertical incision through the capsule near the convex border, reaching to within one inch of the poles with a cross incision at both ends. By blunt dissection a slit is then made through the quadratus lumborum muscle half an inch from its border; through this slit the inner flap of capsule is drawn and then united to the outer flap along its vertical edge, which has been brought through the original incision for this purpose, thus forming a bridge over an intact attached strip of muscle. Carwardine, an English operator, is among those opposed to decapsulation. In addition to surrounding the kidney by gauze slings, as practised by Senn, he paints its whole surface down to the hilum with pure carbolic acid, thus adding to the exudation of plastic lymph whereby the kidney is cemented more firmly in place.

No doubt the present tendency to use absorbable sutures and to avoid the parenchyma will continue to grow. The case of fibrosis, reported by McCosh, following a nephropexy by suturing through the parenchyma is suggestive. Furthermore, a more careful selection of cases likely to be benefited by the operation is apparent, splanchnoptosis being suspected whenever a freely movable kidney is found.

Nephrolithiasis.—It is in the diagnosis of this condition as much as in its surgical relief that advances have been made. As to the latter, apparently there is an increasing disposition to bring the kidney out through the lumbar incision, to thoroughly examine it there and, whenever possible, to suture the incisions made in it instead of packing them. As to the former, I can not better summarize the present diagnostic ability in this field than to quote Johnson's recent able paper on "The Diagnosis of Renal and Ureteral Calculi by Means of the X-ray." He says: "It is generally admitted that oxalate of lime and phosphatic stones may be detected and, under favorable conditions, *excluded* by the use of the X-rays. It is asserted on the other hand that uric acid stones cast such faint shadows upon the photographic plate, that a negative result is not conclusive.

"Among American surgeons in general, no very great reliance is placed on the X-ray diagnosis of kidney stones. It is of course agreed that positive results are often obtained, but since a large proportion of the individuals who suffer from symptoms leading to the suspicion of renal calculus have some other cause as a basis for their troubles, the negative diagnosis is of greater importance than is the positive detection of stone."

From among the foreign observers he quotes Morris and Israel, who agree in placing but little reliance on the evidences furnished by the X-ray, and Albers, of Schöneberg, believes that uric acid, xanthin and cystin stones are in general not capable of demonstration, but finds that stones composed of phosphates and of oxalate of lime, cast extraordinarily clear shadows on the photographic plate.

Johnson draws the following conclusions from his personal experience: "The positive diagnosis of kidney stone by the X-rays is reliable and of great practical value. The negative diagnosis of kidney stones by the X-ray is reliable and valuable up to a certain limit. If pictures of a proper quality are obtained, calculi of oxalate of lime and phosphates, can be excluded. Pure uric acid calculi cannot. Pictures of a proper quality can be obtained with ease in children and slender adults of both sexes. Such pictures can usually be obtained by repeated trials in well nourished adults. When patients are unusually stout . . . the conditions are extremely difficult, and only occasionally will a satisfying result be obtained with the present form of apparatus."

These concise conclusions suggest that the disproportion in the results of different observers is due to the percentage of cases of primary calculus, plus the percentage of unfavorable subjects in the total number examined.

A final note here is that the ureteral sound has been used to detect a renal calculus.

The Ureters.—A redoubled interest in operative procedures upon the ureters is apparent since the radiograph, the perfected cystoscope with ureteral

catheter and sound have demonstrated that calculi are frequently permanently arrested in their descent from the kidneys.

The radiograph locates a calculus in the ureter more positively perhaps than one in the kidney. Johnson in the paper already cited, quotes Kelly as having demonstrated a ureteral calculus by passing a ureteral bougie coated with wax and noting that it bore scratch-marks after having been moved back and forth along the encountered obstruction. Such a demonstration is, of course, more easily made on the female than on the male. The ureteral sound, in addition to detecting a calculus or stricture gives valuable information as to the course of the ureter when left in place and radiographed.

As is well brought out by Young, of Baltimore, in a paper published last August, on "The Treatment of Calculi in the Lower End of the Ureter in the Male," the upper two-thirds of the ureter had presented no great difficulties, while the lower third, the pelvic portion, was held to be inaccessible by at least one authority, as recently as 1898. Twynam's case, reported in 1890, having been overlooked and Cabot's proof that it could be reached extraperitoneally through the Kraske incision having been disregarded, possibly because the Kraske incision had never been employed for this purpose on the living subject.

Young, reporting cases of his own and giving a study of cases in the literature, shows that today calculi are removed from, and strictures divided in, the intrapelvic portion extraperitoneally, through an iliac incision beginning above the middle of Poupart's ligament and running upward and outward, one inch anterior to the anterior-superior spine. On stripping up the peritoneum the ureter is usually found adhering to it.

A further advance may be noted as hinging on the above—often a tuberculous ureter is now removed entire with the diseased kidney, whereas formerly a partial and sometimes very meager ureterectomy was made to suffice.

It is another matter when we take up transplantation of the ureters and only a word will be said of it. Opinions and results are diverse. The risk of ascending infection remains great, but it would seem that transplantation including that portion of the bladder surrounding the ureteral orifices gives the best results.

The Prostate.—More than one present-day writer, commenting on the hitherto desultory progress in surgery of the prostate, adds with evident satisfaction that at last the morbid anatomy of this important organ has come to be appreciated in its true relation to the tenure of life, and that advances made during the past few years in the study and treatment of prostatic enlargement have carried the progress up to the level attained in other fields of surgery.

Castration and its substitutes, vasectomy and ligation of the vas, having been relegated, the revived Bottini operation with perfected instrument, improved technic, low mortality and very considerable number of prime results attracted widespread attention to this puzzling field of surgery about five years ago in which, until then, both suprapubic and perineal prostatectomy in the hands of a comparative few had been yielding results both satisfactory and otherwise.

To-day's advance in surgery of the prostate is marked by less reliance upon the Bottini operation; some desertion of suprapubic prostatectomy; a more general adoption of the perineal route; the use of retractors instead of counter pressure through a suprapubic incision into either the bladder or the prevesical space; fewer attempts to remove every portion of the gland.

Perineal prostatectomy is performed through a transverse or V-shaped incision by dissecting down upon the anterior rectal wall and following it up to the prostate, which is then seized by a tenaculum or forceps more or less specially designed for the purpose, drawn down and incised; it is performed through a vertical incision by opening the membranous urethra on a staff and incising the prostate in the middle line of the prostatic urethra, or by then breaking through the thin lateral walls of the prostatic urethra with the enucleating finger.

Syms combines the two methods to a certain extent by the use of a retractor he has devised, which consists of a stout perineal tube, one end of which carries a collapsed, distensible rubber ball. This is introduced into the bladder through the previously divulsed prostatic urethra, fluid is injected through the tube until the ball has become distended in the bladder behind the prostate. By traction on the tube or stem of the ball, as it were, the prostate is brought down into the vertical incision, which is deepened until the gland is exposed that its capsule may be incised as when the transverse or V-shaped incision is used.

By whatever incision the prostate is reached, enucleation is performed by the finger, beginning at the posterior limit of the gland and working forward to the apex. Occasionally a blunt curette or a pair of forceps to seize the loosened lobes are used to assist in their removal.

A unique procedure is that reported by a French surgeon and advised by him in cases of soft, diffusely hypertrophied prostates, situated high in the pelvis. It consists in isolating the gland. Therefore he calls it prostatomonose. He reaches the gland through a prerectal incision and frees it from the surrounding tissue. The isolation is supposed to bring about a rapid contraction or atrophy.

The Bottini operation now has a narrowed field in which prostatic bars, moderate enlargement and the refusal of the patient to submit to more radical intervention form the chief indications. The modification suggested by several—that of performing the operation through a perineal opening into the membranous urethra, has been practised with evident satisfaction, affording as it does better access to the gland and the bladder, bladder rest, prime drainage of the bladder and good ultimate results.

With the same objects in mind the enlarged

prostate has been incised with the ordinary Pacquelin cautery through a suprapubic opening. The advantages of this transvesical cauterization as detailed recently by a writer in the *Annals of Surgery*, should be secured in selected cases.

The treatment of Acute Gonorrheal Urethritis.—Advance along this important line during the past year is marked by argyrol or silver-vitellin, a new silver-albuminoid compound, and its wide acceptance as the best antigonorrheal drug we have to-day. The reports and comments of many observers go to show that, though its percentage of silver and, therefore, its efficacy are greater than that of any of its predecessors, in solutions as high as 20 per cent. it is unirritating to the urethral mucous membrane. Even a two-per-cent. solution used as a hand injection twice daily by means of a one-quarter ounce hand syringe and retained in the urethra five minutes, shortens the acute stage so positively that it amounts to an abortion of the disease in cases seen in the very incipiency of the invasion. In selected cases Swinburne used a twenty-per-cent. solution to abort the disease.

Evidence is increasing as to its value as an irrigation in various forms of cystitis, including the tuberculous, and as an instillation into the prostatic urethra in prostatitis with prostatorrhea.

Asepsis of the Genito-Urinary Tract.—Two new preparations designed for this purpose are helmitol and uriseptin. Helmitol is defined as a hexamethylenetetramin potentized by a combination with anhydromethylene citric acid. It is said to be unirritating to the digestive tract and to give off free formaldehyde rapidly, even in strongly alkalin urine. Uriseptin is a solution of lithium methaminate in an aqueous extract of triticum and zea. It is of great value in doses of from one to two drams 4 to 8 times daily, in meeting the indications for which it is designed.

The Functional Integrity of the Kidneys.—The *Medical Review of Reviews* gives an abstract of Dr. Rumpel's paper in the *Münchner medicinische Wochenschrift* on the determination of the freezing point of the blood and urine in which the following appears: "Great care is necessary in order to avoid errors. With intact kidneys the concentration of the blood remains constant. . . . Thus, practically it is possible to determine whether there is a unilateral or a bilateral lesion. . . . In determining the indications for operation, a normal concentration of the blood will exclude bilateral renal disease. . . . The determination of the function of the kidneys as shown by the degree of concentration of the blood and urine is of great practical importance in the diagnosis and treatment of renal diseases."

Thus it appears that a reliable index is being found in the freezing point of the blood and the urine; but the present technic of the test is so difficult that the possibility of error is great, and whether the test will ever become clinically applicable remains to be seen.

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ON LAST YEAR'S PROGRESS IN SURGERY.*

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The advances in surgery during the past year have been so great, that it would be beyond the limited space of this paper, to record them all in detail. Especially great was the progress in diagnosis. The value of blood-examination in suspected suppuration has become established. Schnitzler's statement that all purulent cases of appendicitis present leucocytosis, was corroborated by many investigators. In the diagnosis of nephritis and the prognosis of nephrectomy, cryoscopy, as advised by Korányi and Kümmell, gives valuable information. The quality of urine varies with the degree of molecular concentration which, in accordance with the laws of osmosis, produces a proportional variation in the molecular constitution of the blood and in consequence of its freezing point. The physiological freezing point of the blood varies between 0.54 and 0.57, the average point being 0.56. Whenever the renal function was normal, the blood-freezing point did not exceed these figures. In 51 cases of unilateral renal disease it was between 0.55 and 0.57, while in 77 cases of renal insufficiency a variation between 0.58 and 0.81 was observed, the average point reaching 0.61.

Thus the cryoscopic indications for and against nephrectomy are established; in other words, 0.58 to 0.59 would indicate incomplete renal insufficiency and would therefore still justify nephrectomy, as the one kidney would then be capable of performing the function of its extirpated fellow. But when 0.59 is exceeded nephrectomy should be omitted.

By comparing the freezing point of the urine which was obtained separated from one or the other kidney, it can be approximately estimated whether a small or large area in the kidney is destroyed.

The importance of cryoscopy suggests, therefore, that the functional activity of the kidneys should be elicited by this new physical method before complete and radical operative interference is decided upon.

Subdural interposition of rubber tissue without removal of the Gasserian ganglion in operations for tic douloureux, advised by Abbe, marks the new principle of the interposition of a sheet of rubber tissue as a permanent barrier to the reunion of a divided intracranial nerve.

The diagnosis of thoracic diseases was facilitated by the improvement of the skiagraphic methods, which gave a new impetus in operations for lung abscess, for tumors of the thoracic wall and the mediastinum, and permitted of closer localization of foreign bodies.

The case of sarcoma, successfully removed, by Poirier, from the anterior mediastinum through a U-shaped incision is especially noteworthy, the

* Read at the annual meeting of the American Therapeutic Society, at Washington, D.C., May 12, 1903.

large vessels being exposed and the growth extirpated by blunt dissection.

Surgery of the heart was also furthered by the Roentgen method, foreign bodies being located and removed. Incision and drainage of pericardial as well as of cardial abscess have become established methods. Even pedunculated tumors were removed from the external surface of the heart (Ricketts).

Mikulicz, supported by Hochenegg, advocates preliminary colostomy in all cases of acute obstruction due to the presence of intestinal tumors. After the patient has recovered his strength, the growth is removed, after which the gut is carefully reunited. Some of Mikulicz's cases survived the operation for fifteen years.

In carcinoma of the stomach, Langemann found that the absence of lymph-nodes was never missed, a fact, which demands their simultaneous removal.

Krönlein concluded, on the basis of 264 cases of carcinoma of the stomach, that, if no operation is done, the patient will succumb in about a year, while gastro-enterostomy prolonged life about 3½ months. If the growth be extirpated the patient would live about fourteen months longer.

Reerink finds it imperative, in transplanting large intestines into stomach defects, that the gut remains in connection with its own vessels. It is only then that they are kept perfectly nourished.

It is gratifying to observe that the pioneer work of American surgeons in the field of pathology and treatment of appendicitis begins to be appreciated in Europe. Even in Germany, where the most astonishing conservative tendencies prevailed in this direction, the American observations and principles are regarded authoritative now.

The observations of Sonnenburg on lung complications in appendicitis deserve special attention. He found that thrombosis and embolism were noticed fifty times in one thousand of his cases. Roux had but two deaths in 670 interval operations. The classical treatises of Sprengel, Rehn and Riedel should be read by every physician.

The reports of Albert, Czerny and Coley, which are based on wide personal experience, corroborate the superiority of Bassini's method in inguinal hernia.

In renal surgery unusual progress has been made. The practical value of cryoscopy in the diagnosis of the functional activity of the kidneys has been demonstrated above.

The observations of Czerny show that renal tuberculosis is unilateral in the great majority of cases, a fact which justifies primary nephrectomy. In bilateral affection partial resection and curetting are attempted. The predominant signs are cloudy urine, albuminuria, initial hematuria and tenesmus. In most cases renal pain could be observed. The cystoscope in combination with ureteral catheterization proved to be the most valuable aid in diagnosis.

The startling statement of Edebohls, that by stripping the capsule and establishing new anastomoses some renal disorders could be cured, aroused the most widespread interest in the medical world. The results of Edebohls are very encouraging; how far, however, the permanent value of the method goes must be proved by further observation.

The experience of Waldvogel justifies the demand that immediate nephrectomy in rupture of the kidney by the transperitoneal route is the only rational procedure.

The usefulness of the Roentgen rays in diagnosticating concrements in the kidney, ureter and bladder, as first proven by MacIntyre, Twain, Thyne and Kümmell, and perfected by Abbe, Bevan, Leonard and others, is doubted no longer. At first it was thought that only such calculi could be represented as consisted of hard and firm material, like oxalates, while the more penetrable urates left an indistinct shadow, and the translucent phosphates showed hardly at all. Thus the success of skiagraphy in calculi of the urinary tract seemed to depend on their chemical composition, and, consequently, on their greater or lesser opacity. Now, with the aid of the powerful tubes, more or less marked shadows of all three different varieties can be obtained. Soft tubes and a strong current must be employed.

Ureteral catheterization was developed by Kelly and Valentine. The pathology of the prostate was furthered by Albarran, Motz, Lydston, Leverson and Iastreboff. Good results of the Bottini operation were reported by Horwitz, Guiteras, Meyer, Syms and Horwitz. Fuller prefers prostatectomy for hypertrophy of the prostate.

The usefulness of Talma's operation for providing collateral circulation in portal obstruction by omental fixation has been corroborated by many careful observers.

The surgery of the biliary passages shows great progress also. The extensive and successful work of Kehr marks a new epoch in this delicate field. Kehr even succeeded in closing a large defect in the wall of the common duct by excising a pedunculated flap from the two exterior coats of the stomach and after swinging it around sewed it in the new position.

In long-persisting fistula Hildebrand recommended cholecystogastrostomy, specially when adhesions are in the way of good union.

The work of W. J. Mayo, which embraces an analysis of 328 operations upon the gall-bladder and bile passages also deserves the highest praise.

The skiagraphy of biliary calculi has made great progress, as is reported by Senn, Fiedler, Albers, Schönberg, Barnett, and others. It is true that the method is still incomplete, and needs further modification and improvement. It is not so perfect a diagnostic method as that of nephrolithiasis. While a negative result in the case of suspected nephrolithiasis can safely be taken as evidence of the absence of calculi, provided the vertebræ and the twelfth rib show distinctly, the same cannot be said of biliary calculi. But, on the other hand, it can safely be asserted that even a faint skiagraphic reproduction of biliary cal-

culi proves their presence to the expert reader. Thus exploratory laparotomy for suspected cholelithiasis would be rendered unnecessary.

The treatment of fractures has become greatly facilitated by the Roentgen rays. The best proof for their usefulness is furnished by the observation that all modern surgical text-books contain large numbers of skiagraphic illustrations. In fact, in the understanding of fractures a revolutionary metamorphosis has taken place and it is extremely gratifying to note that with the clearing up of the anatomical conditions, formerly so little known, the ratio between therapy and pathological knowledge has been altered by a great increase in the latter.

In articular or comminuted fractures the skiagraph shows whether a displaced fragment can be reduced or not on the day it is fractured and if reduction under anesthesia cannot be accomplished, reposition by open exposure must be attempted. Thus the principles of treating fractures have been considerably altered.

The treatment of the external forms of malignant growths by means of the Roentgen rays has become a recognized method. The results reported by Coley, Pusey, Grubbé, Morton, Allen, Johnson, Skinner and others, cannot be doubted. The observation of the writer that even superficially located sarcoma can be cured, at least temporarily, was corroborated since by the authors mentioned. Recently Senn has furnished undeniable proof of the curative effect of the rays in two cases of Hodgkin's disease.

It is the opinion of the writer, however, that the Roentgen rays should not be substituted for the surgical treatment of malignant growths, but that they should be reserved for inoperable and recurrent cases and for prophylactic irritation after extirpation.

RECENT ADVANCEMENT IN THE THERAPEUTICS OF THE EYE.*

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In the treatment of this subject the writer intends to confine himself to the consideration of certain remedies which have recently come into use in the treatment of ocular affections, purposely omitting the discussion of the X-rays and the Finsen rays in their therapeutic role and of all surgical therapeutic measures.

Of the newer anesthetics and analgesics, acoin, dionin, peronin, and holocaine may be mentioned.

Acoin, a crystalline salt, the hydrochlorate of a base derived from guanidine. This salt is used in the strength of 1-100 to 1-300 for the production of local anesthesia after the manner of cocaine. According to Randolph, it has no effect on the accommodation or on the pupil, does not change the tension of the globe, nor does it cloud the cornea. Its effect is unsatisfactory in conditions of congestion of the conjunctiva, as it is not readily absorbed. On the whole, it is inferior to cocaine as a local anesthetic, but it may be used to advantage for the purpose of removing foreign bodies from the eye and minor operative procedures, when it is not desirable to dilate the pupil or interfere with accommodation.

Dionin (ethylmorphine hydrochlorate). In 5-per-cent. solution dionin has been used for the production of prolonged anesthesia and analgesia. When introduced into the conjunctival sac it produces smarting which is quite severe, edema of the ocular and palpebral conjunctiva and of the lids, and increased lacrimation. This lasts for from twenty to thirty minutes and is followed by analgesia which persists from a few hours to thirty-six hours. It is said to cause striped keratitis when used to produce anesthesia for operations on the globe and for this reason is contra-indicated in operative procedures.

Luniewski (*"Die Heilkunde,"* 1902, 2), basing his conclusions on experiments on animals, states that dionin causes changes in the endothelium of the capillaries and induces the escape of blood plasma in the areolar connective tissue stroma. This is said to improve the nutrition of the cells and to aid in removing pathological products. The indications for its use are (1) for rapid resorption of the products of inflammation, and (2) for producing prolonged analgesia.

The use of dionin has been advised in glaucoma, iritis, iridocyclitis, and keratitis, for the purpose of relieving pain, and it is said to be very efficient (Darier, *Ophthal. Klin.,* 1900, No. 7).

Graefe (*Therap. Beil. d. deut. med. Woch.,* XXVI, 9) advocates the use of dionin in old corneal diseases, except those due to trachoma, in catarrhal conjunctival affections, in iritis and iridocyclitis in combination with atropine. Graefe employs solutions of 10 to 20 per cent. Other authors mention it favorably in the treatment of corneal opacities.

Peronin (benzolmorphine hydrochlorate) is closely allied to dionin. It has an analgesic and myotic effect. Used in 1- to 2-per-cent. solution (Buffalini, *Annali di Otalmol.,* XXVIII, 1899) in combination with atropine, cocaine, and eserine, it accentuates the effect of these remedies in the eye. Its use induces symptoms resembling those occasioned by the use of dionin, namely, edema of ocular and palpebral conjunctiva, chemosis, increased lacrimation. The remedy is sometimes employed in the form of powder.

Holocaine is a substance closely related to phenacetine. It is formed by the combination of acetphenetidin and phenetidin under the influence of dehydrating substances (Heintz and Schlosser). Holocaine is a chloride of this combination. One- or two-per-cent. solutions remain unchanged for long periods of time. Heintz and Schlosser (*Klin. Monatsbl. f. Augenheilk.,* April, 1897) have determined its physiological action; also its effect on bacteria. In a 1-per-cent. solution it is a decided germicide. Holocaine is used in ophthalmic practice in a 1-per-cent. solution. When dropped into the conjunctival sac, it causes only

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very slight irritation. The anesthesia, which is quite profound and affects the iris and ciliary body as well as the conjunctiva and cornea, is rapidly produced, requiring only thirty to forty seconds and lasting eighteen to twenty minutes. It produces its anesthetic effect by paralyzing the sensory nerve endings, has no effect on the vessels and does not dilate the pupil or influence accommodation. Holocaine is the most poisonous of the remedies used for local anesthesia. Its use in the eye is not followed by any deleterious effects and as it is more energetic than cocaine it is of great value in ophthalmic surgery. It does not cause constriction of the blood-vessels, consequently does not control hemorrhage. If used for operative procedure it may be advantageously employed in connection with cocaine and adrenalin. It is of value in the treatment of infected ulcers as well as in operative procedures. The literature on holocaine is extensive.

Recently a number of preparations containing silver, which are non-irritating and which possess decided germicidal properties, have been introduced into ophthalmic practice. Of these nargol, argyrol, protargol, and collargolum may be mentioned.

Nargol is a compound of silver and nucleinic acid. According to Hartridge (*British Medical Journal*, Nov. 2, 1901) it is readily soluble in water and is very stable. It is used in 5- or 10-per-cent. solutions. It causes no pain when introduced into the conjunctival sac, is pleasanter to use and less sticky than protargol. It is efficacious in acute contagious ophthalmia, also in suppurative conditions of the lacrimal sac.

Protargol, an albuminate of silver containing 8.37 per cent. of silver. Neisser (*Berlin. derm. Centralbl.*, Oct., 1897) was the first to call the attention of the profession to it. Since that time it has been used extensively and has proven to be a valuable remedy.

Protargol dissolves readily in water. It should be dissolved in cold water, as heat partly decomposes it. It is used in the strength of 2 to 20 per cent., the solution being brushed over the conjunctiva or dropped into the conjunctival sac. The preparation, even in very concentrated solution, produces but little irritation when placed on the conjunctiva. The solution is rather thick, sticky, and of a dark-brown color; however, it is easily removed by washing with water and does not stain the conjunctiva or skin. The numerous reports on the use of protargol go to prove that it is of value in the treatment of all mucopurulent affections of the conjunctiva. The duration of ophthalmia neonatorum and of gonorrheal ophthalmia is shorter by some days when treated with protargol than when treated with the nitrate of silver, as is clearly proven by Standish (*Boston Medical and Surg. Jour.*, Oct., 1902). A thickened condition of the conjunctiva sometimes follows the acute stage of ophthalmia when protargol is used, requiring its discontinuance and the employment of other remedies.

Protargol has been employed largely in the prophylaxis of ophthalmia neonatorum in the Boston Lying-in Hospital (Cheney, *Boston Med. and Surg. Jour.*, Aug. 25, 1898) with excellent results. This or one of the other albuminates of silver should replace the nitrate of silver as used after the method of Credé in the prophylaxis of ophthalmia neonatorum.

Argyrol, a proteid silver compound, termed by its discoverers "silver vitelline" (Barnes and Hille, *Medical Record*, May 24, 1902), contains 30 per cent. of silver and is soluble in less than its weight of water. It does not coagulate albumin, nor does it produce precipitate when added to solutions of sodium chloride. It has been used extensively in the treatment of purulent conjunctivitis, proving itself to be superior to the nitrate of silver and as good, if not better than protargol. The crystals are dark-brown in color and the color is imparted to the solution. Very little or no irritation is produced by placing concentrated solutions in the conjunctival sac. Barnes and Hille recommend the use of argyrol in a 25-per-cent. solution in all cases of acute conjunctivitis. At the New York Eye and Ear Infirmary, where argyrol is employed to a large extent, it is used in a solution of 30 per cent. every two hours in severe cases of gonorrheal ophthalmia and less frequently in mild cases and when the disease is subsiding. No irritation is produced and, so far as has been observed, no untoward condition has followed the use of the drug. Ophthalmia neonatorum requires seldom more than seven days in the hospital when treated with argyrol. In argyrol we have one of the most efficient, if not the most efficient remedy for the treatment of purulent conjunctivitis. The danger to vision from gonorrheal infection of the conjunctiva is indeed slight when vigorous treatment with strong solutions of argyrol is instituted. Argyrol is also of much value in the treatment of purulent dacryocystitis.

Collargolum, an allotrophic or colloidal form of silver, is soluble in water in the proportion of 1-25; it forms a brownish solution. Unguentum Credé contains 15 per cent. of collargolum.

A two-per-cent. ointment made with one part adeps lanæ (wool fat) and ten parts white vaseline as a menstruum has been employed by Wolffberg (*Woch. f. Therapie u. Hygiene d. Augenheilk.*, Sept. 11, 1902) in gonorrheal ophthalmia and in the treatment of parenchymatous keratitis. If dilatation of the pupil is desired, atropine in the proportion of one-half of one per cent. is incorporated with the ointment. In gonorrheal ophthalmia a portion of the ointment as large as a pea is introduced well into the upper cul-de-sac by means of a glass rod, after cleansing the eye, and a small piece is placed in the lower cul-de-sac. The ointment is introduced every half-hour at first; in a day or two, every hour, and later less frequently. In parenchymatous keratitis, the ointment is introduced twice or three times daily. Wolffberg reports good results.

Trikresol, prepared by the Chemische Fabrik auf Actien, a combination of ortho-, meta- and

paracresol, is advocated as an antiseptic in ophthalmic practice (De Schweinitz, *Therapeutic Gazette,* July 16, 1894, and Jackson, *Ophth. Review,* June, 1902). It is used in the strength of 1-1,000, is reliable and unirritating. It is recommended as a basis for solutions of atropine, etc., and for the purpose of washing the conjunctival sac.

Aspirin.—Krischner (*Ophth. Klinik,* No. 18, 1901) recommends aspirin in rheumatic iritis and in other affections of the eye in which the salicylates are indicated, as it does not have the unpleasant effects of the salicylate of soda.

Thiosinamine, a bitter, crystalline substance produced by the action of ammonia on oil of mustard, has recently been advocated by Suker (Trans. Sec. on Ophth., A. M. A., 1902, 56) as beneficial in the treatment of corneal opacities, exudative choroiditis, plastic iritis, etc. Hyperleucocytosis is induced by its administration and "transudates and exudates are rapidly absorbed." It can be administered hypodermically, but abscesses may follow. It may also be given in three-grain capsules once or twice daily. Many individuals suffer from gastric irritation when they take thiosinamine in capsule; others are not disturbed. Topical applications may be made with a 10-per-cent. ointment. The ointment should be applied two or three times daily and should be well rubbed in. In order to obtain results that are of value, the remedy must be continued for some months; in some cases much more time is required. Suker has employed subconjunctival injections, but he is doubtful whether better results are obtained by this than by the other methods of administration.

Suprarenal Extract.—This drug was first introduced into ophthalmology by W. H. Bates (*N. Y. Medical Journal,* May 16, 1893), and it has ever since been recognized as a most efficient hemostatic. At the present time the active principle, adrenalin, isolated from the suprarenal gland by Dr. Takama, is used in the form of adrenalin chloride, in solution, with chloretone. It may be employed in the eye in the strength of 1-1,000 to 1-10,000; the weaker solution is promptly effective, producing blanching of the conjunctiva in one or two minutes, penetrating to the interior of the eyeball, producing its hemostatic effect on the iris. Adrenalin chloride is of value as a hemostatic in operations on the eyeball and conjunctiva. The operations of tenotomy, advancement, removal of pterygia, extraction of cataract with iridectomy and conjunctival flap, etc., are rendered much less bloody when adrenalin is used. It does not perfectly control the hemorrhage from the larger vessels of the subconjunctival tissue or the larger muscular branches, but makes it less profuse. Adrenalin chloride is valuable as an aid to increase the effect of cocaine, atropine and eserine. The use of the adrenalin follows the introduction of the other remedies by a few minutes. It does not produce any bad after-effects.

Adrenalin is of value in iritis to enhance the effect of atropine when complete dilatation of the pupil is difficult to obtain.

In disease of the lacrimal passages, adrenalin chloride aids in establishing the lumen of the canals.

Iodine Vasogen.—Vasogen (vaselinum oxygenatum, U.S.P.), a product of petroleum, a yellowish-brown fluid, feebly alkaline, readily emulsifying with water. When combined with iodine, which it holds in solution, it is termed iodine-vasogen. It is supplied in the strength of 3 to 10 per cent. Iodine in the form of the tincture has long been used in ophthalmology in the treatment of ulcerative keratitis and trachoma. Recently Duane (*Arch. of Ophth.,* XXXI, 5, 474) has advocated the use of iodine-vasogen, 10 per cent., in ulcerative keratitis, the remedy being applied by the surgeon every second day until the process is arrested and is subsiding when the applications are made less frequently. The writer has found the 10-per-cent. iodine vasogen to be somewhat irritating when applied to corneal ulcers, but quite efficacious. He has employed it in private practice in a much weaker solution (0.5 to 1 per cent.) in a number of cases of mycotic keratitis, advising the patient to drop it into the eye every three hours. The results have been excellent.

Iodoform, in the shape of powdered iodoform, has long been employed in the treatment of conjunctivitis, keratitis and wounds of the eyelids. In 1897 Ammann (*Klinische Monatsbl. f. Augenheilk.,* May, 1897) introduced sterilized iodoform powder into the anterior chamber of an eye in which there was tuberculosis of the iris and ciliary body. The affection was retarded for a time, but eventually enucleation of the eye was required. The experiments of Weill (*Arch. of Ophth.,* XXVIII, 135) were sufficiently successful to encourage the introduction of iodoform into the anterior chamber in cases of tuberculosis of the iris. Prof. Haab, of Zurich, has employed small sterile iodoform rolls and plates in which the iodoform is rendered solid by combining it with gelatine. These little rolls and plates are introduced into the eye in beginning panophthalmitis following wounds of various kinds from splinters of steel, copper, stone, etc., perforating wounds without retention of fragments of the substance that produced the wound, and post-operative infection. Haab is reported to have treated 23 cases (Karolina Knur, Inaug. Diss., Zurich, 1901) with good results in 10 cases, fairly good results in 5 cases, and failure in 8 cases. The iodoform when placed in the interior of the eye is slowly absorbed, three to six weeks being required. The eye is bandaged after the introduction of the iodoform and the patient is kept in bed.

Subconjunctival injections are employed for the purpose of direct medicinal effect and for the purpose of stimulating blood and lymph circulation in the tissues of the eye in certain diseases of the eye. The diseases treated in this way are corneal ulcer, hypopyon keratitis, parenchymatous keratitis, iritis, iridocyclitis, cyclitis (traumatic as well as non-traumatic forms of the last three), uveitis, choroiditis, chorioretinitis, neuroretinitis,

embolism of the central artery, atrophy of the optic nerve, detachment of the retina, malignant myopia and scleritis. The remedies employed are the bichloride of mercury, cyanide of mercury, hetol (sodium cinnamate), and normal saline solution. The results of the experience of many observers lead to the conclusion that the effect of subconjunctival injections of all of the remedies mentioned, except hetol, is to stimulate the lymphatic and blood circulation, to convert indolent into acute processes, to increase nutrition, and to carry off effete material, rather than of any direct medicinal effect. Considered in this light, they are of value in slow forms of keratitis and scleritis and in many cases of uveitis.

Hetol, when injected subcutaneously, presumably produces a local leucocytosis. The experiments of Pflüger (*Klin. Monatsbl. f. Augenheilk.*, 39, 2, 789) and of Lezenius (*Klin. Monatsbl. f. Augenheilk.*, Oct., 1902) indicate that it is of value in tuberculous affections of the eye, in herpes corneæ, and in affections of the iris and choroid not suppurative in character.

Injections of solutions of the bichloride of mercury deep into the orbital tissues in cases of orbital cellulitis have been used recently. The writer, who desires to acknowledge his indebtedness to Dr. Charles S. Bull for the suggestion, has employed injections of sublimate, 1-1,000, in three cases of orbital cellulitis with excellent results, injecting 1 c.cm. of the solution deep into the tissue in three different places and repeating the injection in forty-eight hours if required. In two of the cases pus had formed before the injections were given; this was evacuated. In all cases rapid recovery occurred. In this class of cases the result is due in part, at least, to the direct effect of the medicament on the micro-organisms which are responsible for the pathological process present.

Serum Therapy.—Diphtheria of the conjunctiva and cornea is the only disease of the eye in which serum therapy has been used to any extent. The antitoxin is injected as when used for diphtheria of the throat, introducing it into the loose tissues of the abdomen or in the tissues of the back just below the scapulæ. An initial dose of 1,500 to 2,000 units is given in the case of a child seven to ten years of age, and the injection is repeated in forty-eight hours if the process does not show decided signs of improvement. This method of treating diphtheritic processes in the eye has proved to be of great value. Vision was destroyed in possibly 95 per cent. of the cases before this method was adopted. By the use of antitoxin the disease can now be perfectly controlled and destruction of conjunctival or corneal tissue prevented if the patient is seen before these tissues become greatly involved by the exudative and productive inflammation.

Antistreptococcic serum has not been used, so far as I am aware, but I am of the opinion that it may be of value in phlegmonous inflammations of the orbital tissues and lids due to the streptococcus.

REPORT ON LARYNGOLOGY.*

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The record of advances in laryngology and rhinology during the past twelve months shows as usual much more activity in surgical than in medical therapeutics. A few additions have been made to our pharmacopeia, but the larger share of energy has been expended on improvements in surgical resources, and this, in spite of a vigorous remonstrance by a distinguished British authority, Sir Felix Semon, against what he is pleased to call "a lust of operation."

The writer of this paper desires to be classed as a conservative, yet he feels that it would be unfortunate if protests like that referred to should lead to an *extreme* reaction from radical methods and to the abandonment of certain procedures capable of accomplishing definite good. In neurotic subjects and in those who crave the doubtful honor of being victims of the surgeon's knife it is difficult to determine to what degree results must be attributed to moral effect or suggestion. It is an open question and perhaps an individual one how far an appeal to this factor may be legitimate, yet it is obvious that very many apparently and comparatively trifling nasal anomalies may be removed with advantage. For example, it is by no means an uncommon experience for improvement in breathing space, decrease of postnasal catarrh, and relief of tinnitus aurium, due to its removal, to call attention for the first time to an insignificant spur or ridge on the nasal septum. We do not insist that the intranasal structures shall be arranged in absolute symmetry or with mathematical precision, but the one well-established principle in nasal pathology is that a lesion causing pressure, impeding drainage, or obstructing breathing, one or all, is productive of mischief and should be rectified. Absurd theories will always need correction, reckless surgery will ever demand restraint, until we reach that Utopian era in the course of racial evolution and elevation, or perhaps in consequence of the rhinological "hustling" now prevalent, when the various morbid conditions familiar to us become extinct and deviated septa, adenoids and enlarged tonsils retain merely an historical interest.

Further experience with paraffin prosthesis in deformities of the external nose has served to establish it as a feasible procedure and has brought certain improvements in technic. In order to keep the mixture fluid as well as to protect the fingers of the operator from the heat the syringe of Eckstein is provided with a soft rubber hood or sheath, while the barrel of Quinlan's syringe is surrounded by a hot water chamber. These instruments are thus open to the objection that the contents of the syringe are concealed while the bulk of the latter is inconveniently increased. We have learned, however, that it is unnecessary to use the paraffin at a high temperature and, in fact, it is found to be safer and more satisfactory to introduce it in a semisolid state. The latter is ac-

* Presented to the American Therapeutic Society, May 12, 1903.

complished most effectively by Harmon Smith's syringe, which is fitted with a piston controlled with power and accuracy by means of a screw piston rod. When paraffin of high-melting point is used, firm pressure and considerable care must be employed in molding the mass to suitable shape, a small quantity being slowly injected. In this connection the observations of Comstock as to the fate of the injected substance are of great interest. In a series of experiments he has demonstrated that the paraffin becomes in large part organized, in other words, is incorporated with the living tissues and is no longer a foreign body. Such being the case, one objection to this procedure is dispensed with, moreover, the danger from thrombosis, a possible accident with too fluid paraffin, is absent when one of high-melting point and at low temperature is used, and, finally, the risk of excessive local reaction is eliminated by careful observance of antiseptic details. Similar results have been recorded by Juckuff and Moszkowicz. Gersuny, the special promoter of paraffin prosthesis, finds no advantage in using a mixture of high-melting point and, indeed, ascribes to it the occurrence of pulmonary embolism and similar accidents. He, therefore, adheres to his original combination, and, in fact, is said to be experimenting with a still more fluid preparation, injecting a small quantity at weekly intervals until the desired results are attained. It is fair to conclude that in this measure we have a valuable and permanent addition to our resources. Yet we should not close our eyes to the dangers, some of them most serious, attending this operation. When a procedure like this springs into sudden favor there is sure to be a reaction from its first popularity, based on disasters resulting from its improper or careless use. Cases of pulmonary embolism have been reported by Pfannenstiel and Halban. The escape of the paraffin to the upper eyelid where it forms a distinct nodule, as in the case of Scanes Spicer, is comparatively trivial, except as regards facial disfigurement. In one instance I have seen extensive sloughing of the skin over the dorsum of the nose, possibly from excess in volume or temperature of injected material or from the use of a septic mixture, or instruments. Within a few weeks I have heard of a lamentable occurrence in the form of sudden loss of vision in one eye a few moments after the injection. There can be no doubt of the formation of a thrombus of the retinal artery, the effects of which will be permanent. Accidents of this kind are probably avoidable by observance of the following rules: (1) Thoroughly sterilize the skin at site of injection, the paraffin mixture and all instruments to be used; (2) inject slowly a small quantity of paraffin at a low temperature and of semisolid consistence; (3) maintain pressure at the root of the nose during the injection and until the paraffin has solidified.

But the usefulness of paraffin is not limited to cosmetic purposes. It is claiming a place in the domain of therapeutics, and we find it applied to the cure of atrophic rhinitis.

The submucous injection of paraffin in atrophy seems to have been resorted to with two quite different objects. First, simply for relief of subjective symptoms, as in the experience of Richard Lake, when a patient complained of inability to feel the inspiratory current, owing to abnormal widening of the nasal chambers from atrophy. After the volume of the turbinate body had been augmented by a mass of paraffin the subjective discomfort ceased. Still more interesting and more important, if true, is the claim made by Brindel, Delie, Bröckhärt and others that the functional activity of the mucous membrane is thus actually stimulated. It is easy to understand how the formation of crusts may be restricted and their expulsion facilitated by the more forcible impact of the air current upon a protuberant turbinate body, but one may be pardoned some skepticism regarding the possibility of revitalizing a defunct membrane by propping it up with a bolster of paraffin. Indeed, in advanced atrophy the shrunken membrane is so firmly bound down to the subjacent bone that the injection is found to be impracticable. The application of paraffin to the foregoing purpose is based on a theory of etiology by no means universally accepted, namely, that excessively wide nasal chambers predispose to atrophic changes in the mucous membrane. Disproportion between the diameters of the nasal cavities resulting in abnormal width, or *platyrrhinia*, is according to Siebenmann, Mindel and others, no more frequent in association with atrophy than the opposite condition, *leptorrhinia*. We are, therefore, prepared to admit the benefits of intraturbinate injections of paraffin as to drying and retention of secretion while we await the test of time as to its power to regenerate wasted structures.

Closely allied to intranasal atrophy, in the opinion of some observers, is suppuration in the accessory sinuses. Grünwald holds that the latter is the cause of the former and stoutly sustains the theory of what he calls the "focal" origin of atrophy. An exactly opposite view is taken by Minder, who maintains that sinus disease is always secondary to intranasal inflammation. The question has an important bearing upon the therapeutics of sinus affections. Recent attention has been directed especially to the sphenoidal sinus, a cavity hitherto considered inaccessible and infrequently involved. The fact of a more intimate relation between these various cavities is established, the correct interpretation of some obscure symptoms has been determined, and many cases of sphenoidal empyema are being reported. The study of the sphenoid has been concerned chiefly with the best method of approaching it when suspected of containing pus. The usual way has been to seek the ostium by crossing the middle turbinate obliquely and to enlarge the normal opening by breaking down the anterior wall. It has been pointed out that even in what we are in the

habit of calling a normal condition the sphenoid is not widely separated from the maxillary sinus, and, in many cases, the dividing partitions are few and thin. Therefore, a more direct route to the sphenoid, especially when the nasal passages may be occluded, would be by way of the antrum of Highmore. Advantage has been taken of this fact by Jansen, Furet and others, who go so far as to recommend this method, even when the maxillary sinus is known to be healthy. In dealing with the sinuses, especially the sphenoidal, we always run the risk of being foiled by the existence of anomalies which no precautions can detect. Curious anatomical variations have been so often seen, that any improvement as regards technic or ease of access is to be welcomed.

Yet the tendency of the time seems to be toward the belief that no better results are derived from extensive operation than from a moderate course which has in view free drainage and antiseptic irrigation. One who is thus relieved of pain and protected from the risks attending pent up and eroding pus is likely to be content if he appreciates the uncertainties and discomforts of a more radical operation.

Discussion as to the virtue of topical applications in diseases of the upper air tract will never cease. Sprays, pigments, insufflations, and so on, each have their advocates and opponents. The method of making an application is less important than its effectiveness; its agreeableness is a matter of some moment with many patients. In these respects new claimants for favor are trying to crowd out the time-honored silver nitrate. Silver gelatose (albargin), silver vitellin (argyrol), ichthargan, protargol and numerous other silver salts are offered as substitutes, with the claim that they are less unpleasant and more effective, because they do not form an insoluble combination with the secretions and hence possess greater penetrating power. To one who has experienced the extremely disagreeable sensations following a nitrate of silver application to the throat the former statement will be most welcome and it is quite true as regards most of the preparations alluded to. It is more difficult to prove the fact of greater penetrating power; experiments on tissues outside the body being hardly a fair criterion. Tests by immersion of strands of catgut in a solution are not conclusive. A just conclusion in this respect must rest upon a series of observations extending over a long period. My own experience has been in the main limited to silver gelatose and silver vitellin, which have been used in a great variety of inflammatory conditions, acute and chronic, in the pharynx and larynx. The assertions of Barnes, Lederman and others as to the non-irritating character of argyrol, even in the strongest solutions and on the most sensitive membranes, have been confirmed. It does not seem to me quite certain that the effects are so pronounced and prolonged as with silver nitrate. Here, again, the personal factor must be eliminated; so many people are dissatisfied unless they feel an application "take hold." Yet the milder measures are to be preferred, even though it is possible to show results only equally good.

Hitherto albargin has been used chiefly in genito-urinary diseases. In these results have been so decided as to encourage us to expect good of it in the upper air passages. It has been applied as a spray in 5- and 10-per-cent. solution to the pharynx and the larynx, the primary effects resembling those of silver nitrate but being less violent, at first stimulation and, secondarily, decrease of secretion. Among other agents which have come into more or less prominence may be mentioned urea, given internally, in 5- to 20-grain doses three times a day in tuberculosis, and mucin given internally and applied locally for atrophy. All that can be said of them up to the present time is that they seem to act favorably.

In conclusion, attention should be drawn to the great dearth of interest in local therapeutics. It is true that much care and patience are necessary to permit an honest judgment as to the action of drugs and that investigation in this line is much less attractive and exciting than in that of surgical therapeutics. Yet, on the one hand, surgery is not a panacea, and on the other, substantial benefits may be expected from a conscientious study of local medication. It seems worth while, therefore, to urge a more earnest cultivation of this much neglected field.

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RECENT ADVANCES IN ELECTROTHERAPEUTICS.*

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RADIOTHERAPY.

At the present moment radiotherapy is uppermost in the line of recent advances in electrotherapeutics, and, thanks to the initial work of Prof. Finsen, has now become an established branch of therapeutics. But though Finsen laid the foundation stones, Roentgen capped the edifice with a radiation of far greater intensity, whose therapeutic value has been demonstrated now beyond question by a host of therapeutic workers.

Though the solar light had long been known to produce superficial effects (sunburn, conjunctivitis, etc.), and had even been concentrated by lenses to produce a simple effect of heat, Finsen was the first to intentionally employ it to produce tissue changes inimical to certain diseases, particularly lupus. He was the first to differentiate the value of the different wave lengths of the visible spectrum and of its invisible field, and thus to point out that different regions had differing therapeutic actions upon living tissue. The next step, also taken by Finsen, was from the solar light, as a source, to the arc light, and now successively experiments are being conducted with

* Read before the meeting of the American Therapeutic Society, at Washington, D.C., May 12, 1903.

all the various kinds of artificial light produced by electricity, with the brush discharge of influence machines and of high frequency currents, with the glow of Geissler tubes, etc.

It is assumed that the violet and ultraviolet regions of the spectrum have the desired therapeutic properties. Hence much ingenious effort has been expended in excluding the other luminous and heat radiations from the total output of the electric arc light, or in constructing a source of light whose main product should be the violet and ultraviolet rays. For this purpose arc lights with iron electrodes have been the most successful since the spectrum from the combustion of iron is very rich in the violet and ultraviolet radiations. The violet rays of the Geissler tube have also received a trial.

The situation at the present moment may be summed up by saying that all of these sources of light possess only a feeble power of penetrating living animal tissue, unless prior compression (as by Finsen in lupus) is employed. The quartz compressor is essential to success in local applications, or, if, at the best, greater penetration is secured by aid of powerful, costly and troublesome arc light systems, even then the effect upon a photographic plate is comparatively small and requires considerable time to secure.

If now, in contrast to the radiations of solar light and of the various modifications of the electric arc light, we turn to the X-radiation we secure with the greatest ease the very penetration into and within tissue desired. This would be of no consequence, if it had been shown that the quality of the arc light radiation possessed therapeutic advantages over that of the X-radiation. But this has not been shown. On the contrary, it is known that the X-radiation is possessed of extraordinary curative properties to tissue beneath the surface of the skin.

There can be, in my opinion, but one conclusion, and that is that all forms of solar, electric arc, and other artificial lights have been entirely supplanted in their efficiency and usefulness by the X-radiations.

However, it is not beyond the bounds of possibility that Roentgen radiation may in turn be supplanted by the Becquerel radiations discovered by M. Henri Becquerel in 1896. Uranium, polonium, actinium, and lastly radium, extracted from pitchblende, all, but particularly the latter, emit a radiation similar to actinic and X-radiations. The present cost of radium is, however, prohibitive. It is reckoned at $6,000 per gram, or $2,722,555 per pound.

A peculiarity of radium radiation is that it imparts a persistent radio-activity to almost all substances in its neighborhood, while the radio-activity imparted by the X-ray dies out the moment the initial stimulus ceases.

There appears to be a radio-active vapor of radium and an associate ionization of the air causing a discharge of electrical charges. Physiological and chemical effects similar to these produced by the X-ray are fully demonstrated. Prof. Curie, as quoted by Mr. W. J. Hammer, has said that "he would not care to trust himself in a room with a kilo of pure radium, as it would burn all the skin off his body, destroy his eyesight, and probably kill him."

Recent practical advances in phototherapy consist, therefore, for the most part and for the present, in increasing clinical experiences in therapeutic application of the Roentgen ray. I will offer a few data in this direction.

Dosage.—In the selection of a working Crookes tube a soft tube will, as a rule, do superficial work, while a hard tube could be selected for deeper work. The hard tube is the safer. Practically the effect of the rays varies with the dosage. It ranges from mild stimulation to actual destruction of tissue. In weak dosage the growth of the nails, of the hair, of the skin, in general, is augmented, while in strong dosage the vitality of these structures is lowered or destroyed.

The X-ray Burn a Cancer Nidus.—Recently the question has been asked, "Can X-rays produce cancer?" The query has originated in the fact that the X-ray burn has in more than one instance proved to be a nidus of cancer development. Cases of this kind have been reported by Dr. C. W. Allen, of New York, and Dr. White, of Boston, and the case of Dr. Blacker, of England, who cured the King of a rodent ulcer and soon after died of epithelioma, is well known. In the last case, Dr. Blacker suffered from a severe dermatitis of the hand and arm, which in its turn became the seat of a rapidly advancing epithelioma, ending fatally. Also, it is well known that a Mr. D., one of Edison's X-ray exhibitors, having incurred a similar dermatitis of the hand and arm, had been obliged to have the arm amputated by reason of the development of carcinoma in the wake of a severe X-ray dermatitis. These instances I have mentioned in order to emphasize what has seemed to me a vital point in the treatment of open and ulcerative cancerous growths, and one which has guided my practice now for a long time. This point is never to produce X-ray dermatitis of an open ulcerating cancer, for the reason that if such a dermatitis, particularly of a high grade, is produced, the cancerous infiltration will rapidly follow in the track of the newly inflamed tissue and the cancer will spread with great rapidity. Thus practically what was meant to cure the patient proves to be the cause of the patient's death, and the operator consoles himself with the thought that the result was inevitable, whereas, with a proper precaution, this could have been prevented, and possibly the patient cured.

Secondary Infection of Open Cancer.—There is still another failure in technic which may result in a failure to cure an otherwise curable case. This is a failure to guard the ulcerative and open cancer from extensive secondary infection due to the very application of the X-ray itself, or rather to the use of a Crookes tube, and its alternating electrostatic field. Every one must have no-

ticed the dense collection of dust particles upon the outside of an actuating Crookes tube. In the atmosphere of New York, in my office, such a tube, if high in vacuum, is densely coated with dust after an hour's use. This dust is directed to the tube from the entire air of the room and concentrated upon it. What is true of the tube is equally true of the patient, and the case is as if we sprayed the dust of the room directly into the ulcer. I have submitted the dust from such a tube to Prof. H. T. Brookes, of the Pathological Laboratory of the Post-Graduate Medical School and Hospital, for examination.

Before noticing this fact I was struck by the fact that certain cases of cancer went on to a fatal termination by secondary infection, while at the same moment local cancerous growths exhibited marked retrogression. At present I avoid this secondary infection of open wounds under X-ray treatment by covering the wound with a layer of borated cotton and otherwise using antiseptic preparations in the wound; but it is obvious, to speak broadly, that in given cases the X-ray can either kill or cure the patient. It has been recently claimed by Dr. Mount Bleyer that this same secondary infection is the causation of the ordinary dermatitis or X-ray burn upon the sound skin. I cannot believe that this is possible, for I cannot see how the X-ray agency can sufficiently drive the infecting micro-organisms into the skin itself.

X-ray Histofluorescence.—I now turn to a long-continued practice of my own, which I hesitate as yet to claim as a recent advance, and yet, which, I believe will be ultimately classed as such. I refer to a procedure which I have ventured to term X-ray histofluorescence. It is well known that certain substances absorb the invisible, ultra-violet waves and transform them into longer and visible waves. This is the explanation of the phenomena of fluorescence and phosphorescence. The X and similar radiations produce a coloration of many salts in solution. Upon this quality is based radiography. These radiations also cause certain dry crystalline and other substances to fluoresce and phosphoresce. And upon this quality is based radiofluoroscopy and the fluoroscope in common use. X- and other radiations also cause fluorescence and phosphorescence of quite a number of salts and chemical derivatives when these are held in solution. This latter fact may be easily demonstrated by the following simple experiment. Dissolve in a test tube five grains of bisulphate of quinine in, say, three drams of water. Close, for convenience, the test tube with a cork and place it in the ordinary fluoroscope box from which the usual fluoroscopic screen has been removed and replaced by a covering of several layers of black paper. Upon now exposing the test tube to the X-ray the solution of quinine will be seen to glow with a fine opalescent, bluish-purple fluorescence. The same experiment may be made with various other substances, each affording a characteristic fluorescence. Esculin, fraxin and eosin are fluorescent under these conditions, also petroleum, magdala red, uranine, saffronine, paviine, amidophthalic acid, fluorescine, rhodamine, thallein, resorcinblue, resorcorufin, and related anilines.

In the treatment of cancer and other diseases it occurred to me that I possibly might avail myself of these facts to administer a drug medically, capable of fluorescence, and at the same time establish its fluorescence in the tissues themselves by means of the X-ray. In the case of the quinine solution we should get the much-desired violet radiation and get it, too, in very close quarters with the tissue elements we desire to affect. A feeble fluorescence of a quinine atom lying against a tissue atom could equal in therapeutic result a much more powerful radiation from a fluorescing source much further distant. Acting upon this idea I have been in the habit during the last year of administering from five to ten grains or more of bisulphate of quinine, about one hour before X-ray treatment. I cannot affirm it, for we have nothing thus far but clinical evidence to rely upon, but I believe that my cases thus far treated by a combination of fluorescing medicines and the X-ray have made more improvement and more certain recoveries than patients not thus treated.

At all events, while all are so blindly groping, in the treatment of cancer, the idea involved in the procedure I have ventured to term X-ray histofluorescence has seemed to me worthy of submitting to others for trial and investigation.

The substances above named fluoresce in many colors, as for instance pale blue, purple, green, yellow, yellowish-green and orange. Thus, by this procedure the living human animal becomes actually to resemble a glow worm of a certain color, though, of course, in feeble solution, the substance administered could hardly afford a fluorescence visible to the eye. But certainly a phototherapic effect must be produced upon a tissue saturated with the glow, faint though it be, of the color employed.

In fact, in regard to the present use of quinine and some other substances to cure malaria, Dr. A. F. A. King, of Washington, D. C., has already and most ably advanced the theory that the effect of the quinine was, by virtue of its fluorescence, under the normal conditions of sunlight to prevent the sporulation of the parasite in the dark. The plan I have proposed, however, is to set up the fluorescence of medicinal substances previously administered either hypodermatically and locally, or by the mouth, and generally by means of the X- or other artificial radiation.

This brief paper has dwelt mainly upon radiotherapy, because, as a matter of fact, this procedure has established a new epoch in therapeutics. If nothing more shall be accomplished than to cure rodent ulcer, some other forms of cancer and to cure lupus, electrotherapeutics has nobly fulfilled its contribution to the brotherhood of curative procedures in medicine.

RECENT ADVANCES IN ORTHOPEDIC SURGERY.*

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Orthopedic surgery concerns itself with the scientific study and treatment of deformities and crippling affections of the human frame. It is useless to restrict this statement by reference to any special form of treatment, since we have not yet reached perfection, and methods of treatment are in a healthy state of change, corresponding to our growth in knowledge. We have, however, already outstripped the etymology of the term orthopedic, which refers to the straightening of children, in other words, to the correction of their deformities, since there is no more promising or active field than the treatment of crippled adults. Orthopedic surgery justifies itself, not by definitions nor by particular modes of treatment, but by results due to the wise selection and careful application of means, rendered possible by special study and experience. It occupies the fortunate position of being able to demonstrate its results by the actual symmetry, power, function and efficiency of the affected member.

The most picturesque event in our work during the past year has unquestionably been the visit of Prof. Adolf Lorenz to this country, and the public demonstrations of his method of manual replacement of the congenitally dislocated hip. In spite of previous attempts to correct this condition it was left for our European confrères, and especially Paci, Lorenz and Hoffa, to work out practical methods of reduction and retention. The battle has been waged between the manual and cutting operations with the result that within a well-defined age limit the so-called bloodless method is the method of choice, while various cutting operations, especially as applied to the older and severer cases, have their proper field. There is reason to think that both methods have their place, and that both are susceptible of still further improvement. In spite of the very great advance, marked by these operations, it should be remembered that the treatment fails either partially or wholly in a considerable proportion of cases, that even in manual replacement complications are not infrequent, and are sometimes serious, and that the after-management is prolonged and requires much skill and experience.

The Lorenz operation illustrates the present tendency in orthopedics toward radical interference by simple methods. Experience has shown that the soft parts are much more tolerant of forcible manipulation than was formerly supposed, and that in the absence of bony anchylosis, deformed hips, knees and feet of severe grade and long standing may often be corrected at one sitting, with or without simple tenotomies, that formerly could either not be corrected at all or only by great expenditure of time and effort. To this is added the advantage that the long bones may be readily and safely cut or broken and adjusted wherever necessary to overcome deformity. They are nearly as amenable to interference and even to subcutaneous work as tendons. In both cases the perfection of the ultimate result will largely depend upon the mechanical after-treatment.

Along the line of the employment of great corrective force to the treatment of severe deformity is the well-known operation of Calot for the forcible correction of the kyphotic spine. While the operation proved to be less dangerous than would be *a priori* supposed, the results were unsatisfactory and the method has been abandoned in this country. The employment of various corrective postures without anesthesia for the application of jackets is its only legacy. These vertically or horizontally hyperextended postures for the application of fixed jackets appear to mark an advance in the treatment of Pott's disease of the spine. In the treatment of severe lateral curvature special exercises alone accomplish but little, and our German confrères are devoting much study and experiment to the working out of practical methods of applying jackets during forced correction, with some promise of advantage.

While the treatment of deformities has become more radical and more operative, the tendency is toward simplicity of method and away from the severe cutting operations, and especially from those procedures which demand a considerable sacrifice of tissue. Cuneiform osteotomies have been largely replaced by linear, which are usually safer and just as effective. Early excisions for joint disease in children have been virtually abandoned, as being both unnecessary and unsatisfactory, and have been replaced by erasion or mechanical treatment. Excision of the knee in childhood is absolutely rejected, except to save life, on account of its enormous interference with the growth of the limb and the liability to secondary deformity. In adults joint excision may for many reasons be more freely employed. Bone operations for the correction of clubfoot, and even extensive open operations on the soft parts are losing ground, as an equally radical correction can usually be obtained by less severe procedures. In a word, while radical as to the amount and rapidity of correction, the tendency is toward conservatism as to the means. It is no longer good practice to take months or years to effect a correction that can be done as well or better at one or two sittings, though mechanical treatment is as important as ever, and frequently, if not usually, holds the key to the situation.

Another marked tendency in modern orthopedic work is the increase of interest manifested in pathology and the greater reliance on exact means of diagnosis. Considerable work is being done with blood counts and the microscopic and bacterial examination of growths and fluids. In some hospitals a culture is made from every abscess opened, and the X-rays are used, and used repeatedly, on practically every chronic joint. Tuberculin has also been employed with some-

* Read by invitation before the American Therapeutic Society, Washington, May 12, 1903.

what doubtful results, as a means of diagnosis. The result of these studies has been a more exact localization and pathology. French surgeons particularly have been interested in detecting and extirpating extra-articular disease at an early stage, saving at least some joints which would otherwise have gone on to extensive disease or disintegration. Primary tuberculosis of the patella is one of these extra-articular diseases for which one should be on the watch, and which, if detected early, may enable the surgeon to save the joint. Dr. Lloyd, of New York, and others have done excellent work on peri-articular bursitis and tenosynovitis, which, if properly diagnosed and treated, are often readily relieved, and should not be confounded, as they often have been, with joint affections.

There has been a distinct increase of interest in and knowledge of the non-tuberculous lesions and processes in or near the joints. Typhoid, pneumococcic, gonorrheal, syphilitic, septic and traumatic lesions are becoming more frequently recognized and more scientifically treated. This tendency is well illustrated by the remarkable work for adult cripples, done in the last few years by Dr. Joel E. Goldthwait, of Boston, and his associates. This is probably the most important movement in orthopedics at the present moment; it is being carried on with painstaking attention to the pathology, and has already added greatly to our knowledge and therapeutic mastery of the crippling diseases of adult life. Drs. Goldthwait and Painter find that many of the obscure knee affections of adult life are due to hypertrophied synovial fringes or racemose fatty tumors hanging into the joint. These may complicate other conditions or occur independently, and may often be removed with relief to the symptoms. Another class of cases upon which brilliant work has been done by the same surgeons is that of the chronic rheumatoid affections of the joints, most common in adults, but by no means confined to them or to advanced life. Chronic stiffening of the spine alone or in connection with other joints has attracted much attention from neurologists and internists in Europe in the last few years, but the very original work done in Boston has marked a distinct advance. The cases are divisible into two principal types, a rheumatoid, which is atrophic, and an osteo-arthritic, which is hypertrophic in character. They are amenable to management designed to promote general and local nutrition; and all depressing treatment, whether medicinal or other, should be avoided. The leg deformities should be corrected by the use of moderate force under ether, at several sittings when necessary, and proper retention splints applied for increasing periods until the patient is enabled to walk. The spinal cases require mechanical support, but without suspension. Very positive and gratifying results are already reported. In some of the bad osteo-arthritic hips the osteophytes, and in some cases the head of the femur also have been removed with advantage.

The routine employment of the X-ray has led to the discovery that chronic osteomyelitic foci are not uncommon, and that these may often be extirpated with the relief of long-standing and sometimes obscure symptoms. It has also demonstrated that osteitis deformans, Paget's disease of the bones, of which only eleven cases have hitherto been reported in this country, is a fairly common cause of pain and disability in advanced life. Dr. Locke, of Boston, reports with radiograms 21 cases of this hitherto rarely recognized affection at the Congress of American Physicians and Surgeons.

Considerable work has been done in bone atrophy following acute and chronic lesions of the limbs: Function transference by tendon-grafting has lately come into prominence; the monograph of Dr. Vulpius, of Heidelberg, published in 1902, contains a list of about 200 papers on this subject, nearly all published in the last ten years. It is not too much to say that the results have, on the whole, proved disappointing, though the method proves useful in certain cases and is still being improved by perfection of technic, better selection of cases, combination with other operations, and more careful mechanical treatment. Function transference through nerve suture is still in its infancy and of uncertain value. Suture of the brachial plexus for obstetric palsy has recently been done with some asserted benefit.

It may interest some to know that there are three German and two French journals, and one Italian journal devoted to orthopedic surgery, besides the Transactions of the American Orthopedic Association, of which the fifteenth annual volume has just been published; this contains a list of about three thousand papers on orthopedic subjects selected from medical literature in the last two years. A recent investigation by Dr. Harry M. Sherman of San Francisco, late President of the American Orthopedic Association, showed that about half the medical colleges in the Association of American Medical Colleges afforded instruction in this branch. Several of our large cities have well equipped orthopedic hospitals, wards or clinics under the direction of competent surgeons. There are national orthopedic associations in England, Germany and the United States, of which ours is the oldest; there are also local societies in Chicago, Boston and New York.

It may thus be fairly said that the specialty has cast off the swaddling clothes of its early limitations, and is in a healthy state of vigorous growth. Proving all things and holding fast to that which is good it invites and welcomes closer cooperation with its sister branches of the healing art for the relief of suffering and disability.

Pyrogallic Acid in Lupus of the Nose.—Tampons impregnated with a 10 per cent. ointment of pyrogallic acid are employed with good result by Wittmaack (Münch. med. Woch., Aug. 4, 1903) in lupoid ulcerations of the nose after the use of the curette. They are renewed daily for three or four days, then follow three or four days of rest, then another course, etc. Pain is slight and hardly any reaction is noticed.

NOTES ON OBSTETRICAL THERAPEUTICS.*

BY CHARLES M. GREEN, M.D.,
OF BOSTON.

THE TREATMENT OF PUERPERAL INFECTION.

I. *With antistreptococcic scrum.*—Although general interest in serum therapy for this still prevalent puerperal complication has notably waned in the last few years, the hope is not dead that scientific medicine may yet evolve a rational serum treatment for streptococcus infection. In 1899, a committee of the American Gynecological Society (Trans. 1899), after a careful study of the subject, concluded that the claims of success for serum therapy were not substantiated. Work on this subject has still gone on, however, and there is a considerable literature since that time. It is generally admitted that anti-streptococcic serum is powerless against the toxins produced by germs other than the streptococcus. And it is also believed that a large proportion of puerperal infections are due not alone to the streptococcus, but to a mixture of organisms. Moreover, it is known that there are twenty or more genera or strains of the streptococcus, and that a given serum can prove effective only against an identical genus of the organism. Drs. Packard and Willson (*American Journal of Medical Sciences,* Dec., 1902), in a valuable summary of the present status of this subject, point out that to overcome the practical difficulty of obtaining a serum suited to specific cases, efforts are in progress to render serum as polyvalent as possible by immunizing animals with as many different strains of the streptococcus as possible. An ideal method of obtaining an effective serum would be to immunize the animal with the toxins of a given patient, and with the serum thus obtained to treat the patient from whom the toxins were taken. Unfortunately, under present, known methods, the process of obtaining the serum thus requires too long a time for its availability in a given case. The attempt to obtain a polyvalent serum is one in the right direction; and the future may have a success in store for us.

II. *With intravenous use of formalin.*—The pyrotechnic rise and fall of the formalin method of treatment is perhaps too recent and too well known to make it serviceable for me to allude to the subject. The daily press has vied with medical literature in spreading the knowledge of the new discovery; and doubtless many cases have been treated by formalin injections, the report of which will never be made public. It has fallen to the writer to observe the effects of formalin injections in three cases, all seriously infected; two died in spite of, and one recovered notwithstanding, the intravenous use of formalin. Despite a few apparently successful results, Dr. Park, of the New York Health Department, after a series of careful experiments on rabbits, has shown that the intravenous injection of formalin is not only useless, but is attended with considerable danger, on account of the baneful effect of this agent on the blood, in causing disintegration of red- corpuscles. Indeed the infected rabbits treated with formalin injections died sooner than those which had to contend only with the streptococcus. Obviously a safe and effective intra-vascular antiseptic agent against the streptococcus is not yet known.

III. *With intelligent, painstaking prophylaxis.*—As in the case of that symptom-complex known as puerperal eclampsia, the most effective therapeusis against puerperal infection is prevention. But as Cullingworth and others have pointed out, notwithstanding the efforts of didactic and clinical teachers in the last two decades, there is still a deplorable amount of puerperal sepsis. In a recent editorial paper, the *Boston Medical and Surgical Journal* (April 23, 1903) has said: "The study of preventive medicine at the present time occupies a prominent place in the medical world. Large sums of money are annually spent, institutions are founded, and professorships and fellowships are endowed, for the furtherance of this object. Nevertheless, puerperal sepsis, which was perhaps the first to be recognized absolutely as a preventable disease, still continues to flourish in all communities and with considerable frequency." The responsibility for this lamentable condition rests not upon scientific medicine and medical teachers. The nature of puerperal sepsis is well understood; and "the methods by which infections are to be avoided are readily formulated, and are easily learned and put in practice." No well regulated lying-in hospital or teaching obstetric clinic has to-day a noticeable septic mortality. The Boston Lying-in Hospital, with the statistics of which I am most familiar, in the last eighteen years has had fatal sepsis in less than $^{15}/_{100}$ of one per cent. in nearly 10,000 cases. "It is said that the statistics of lying-in hospitals are of no value for comparisons, because their patients are surrounded by safeguards which it is impossible to provide for the average patient in private practice." Yet to lying-in hospitals are brought cases already septic, cases illustrating all phases of pathological labor, and demanding all degrees of operative intervention from low forceps to Cæsarean section.

But granting that house patients of lying-in hospitals are safeguarded by superior facilities, it is far from true that large out-patient clinics are equally fortunate. These out-patients are derived from the poorest classes, live in unhygienic tenements, and are not provided with the supposed necessities for the conduct of aseptic labor. These patients, also, are attended by young men in their pupillage, who have had but little clinical experience in surgical or obstetric work. What are the results? The out-patient service of the Boston Lying-in Hospital cared for over 1,800 cases in the year 1902, with a septic mortality of less than $^{16}/_{100}$ of one per cent., and the work was done by third-year medical students, supervised by the Hospital Staff. Doubtless other teaching clinics have equally good results, which can be

* Read by invitation before the American Therapeutic Society, May 12, 1903.

attributed only to sound teaching, painstaking supervision, and conscientious individual work on the part of the medical student. "If," the above-mentioned editorial points out, "such results can be obtained and maintained year after year by men of practically no experience, among surroundings of poverty and filth, there would seem to be very little reason why the practitioner of obstetrics who is reasonably careful in his aseptic technique should be troubled by cases of infection."

In teaching the lesson of obstetrical asepsis, too much emphasis cannot be given to the fact that obstetrics is specialized surgery; that there is no essential difference between surgical and obstetrical asepsis; that in obstetrics as well as in surgery, not alone hands and instruments, but the field of operation, must receive adequate antiseptic preparation. The perfect sterilization of instruments is now possible, reasonable care may give suitable preparation to the vulva and to the contiguous parts which need be touched; but the asepsis of the naked hand is still a matter of uncertainty. The use of the sterilized rubber glove, however, removes all uncertainty in this particular; and the time has come when this addition to our aseptic preparation must be accepted and adopted. I have made careful trial of the sterile glove in all phases of obstetric work, from simple, uncomplicated delivery, to high, manual and instrumental interference; and I am convinced that the glove in no way inconveniences the operator or interferes with his work, any more than in abdominal surgery.

Admitting then, as we must, that the teacher and clinician are doing all they can to spread abroad the lessons of puerperal asepsis, the duty yet devolves upon the profession at large not only to practise but to preach the doctrine of Oliver Wendell Holmes and of the martyred Semmelweis, and to invoke the conscientious efforts of all our colleagues in the obstetric art to the end that puerperal fever may become one of the rare enemies of human happiness.

THE USE OF SUPRARENAL EXTRACT IN THE TREATMENT OF UTERINE HEMORRHAGE.

The value of adrenalin chloride, as an astringent and hemostatic in affections of the eye, ear, nose and throat, has been proved by clinical experience: Dr. W. H. Bates (*New York State Journal of Medicine*, July, 1902) has written on this subject. Stimulated by the experience of Bates and others, Dr. George T. Harrison (*loc. cit.*) has made use of this comparatively new application of organotherapy in the treatment of uterine hemorrhage. He has found it efficacious in five grain doses, t. i. d., in the treatment of chronic hyperplastic endometritis, with hemorrhage persisting even after curettage. In bleeding fibromyomata uteri, Harrison believes that suprarenal extract excites to contraction not only the non-striated muscular fibers of the blood vessels, but also those of the uterus. In proof of this belief he has observed that painful uterine contractions are evoked by the extract. It is supposed that the extract causes contraction of the uterine muscle, and that this uterine contraction produces as well a diminution of caliber in the blood vessels,—hence diminished nutrition and, besides, direct pressure, with resulting retrogressive changes.

If these observations are valent, we should expect benefit to result from the use of adrenalin in cases of post-partum subinvolution. Bates asserts that the extract has been used locally with effect in post-partum hemorrhage; but it could hardly be expected to act quickly enough when administered internally. In metrorrhagia occurring at the menopause, De Brand (*La Tribune Médicale*, July 23, 1902) has found the solution of adrenalin chloride effective when ergotin had failed; and he believes the drug to be of great value in severe uterine hemorrhage. Evidently this new therapeutic measure is worthy of further investigation.

OBSTETRICAL ANESTHESIA.

Modern civilization seems to have developed a type of woman who is incapable of bearing the pain of physiological labor. While some women, in good health, with nerves in stable equilibrium, pass through their ordeal with courage and comparative equanimity either without anesthesia, or at most with moderate anesthesia in the perineal stage, many, with little or no courage, and perhaps less well endowed physically, clamor for complete anesthesia even in the first stage of labor. On the discovery of sulphuric ether anesthesia, and from the advocacy of Walter Channing, the first professor of obstetrics in Harvard University, it was at first supposed that the pain of parturition was at an end. But while a reasonable use of ether has proved to be an inestimable blessing, not only in operative labor, but as a palliative in severe types of spontaneous delivery, it has been found that ether, and chloroform as well, when used to the extent demanded by many women, often produces uterine inertia, necessitates operative intervention, and also predisposes to post-partum bleeding.

Medullary narcosis has been advocated to meet the demands for a safe and effectual method of relieving the pain of labor. But Professor Jewett, in his paper read before this Society in 1902, said that it is by no means proved that spinal cocainization is safer than other methods in the presence of chronic visceral affections; and he quoted Bogart, who, after a long experience with spinal anesthesia in surgical practice, has expressed the belief that its dangers are too great to justify its use in ordinary obstetric practice, and that in obstetric operations ether is safer and better.

Von Steinbüchel, of Graz (*Centralblatt für Gynäkologie*, Nov. 29, 1902; *Annals of Gynecology and Pediatry*, Feb., 1903), has done an important service by investigating the merits of scopolamine-morphine narcosis. He points out

that the ideal narcotic for obstetrical use should have the following qualities: first, it should allay pain without diminishing the force of the uterine contractions; second, it should not be of itself dangerous; third, it should not increase the dangers of inhalation narcosis, should it become necessary to resort to the latter; fourth, it should not endanger the life of the fetus; fifth, it should not produce or favor post-partum uterine inertia. Von S., in a series of cases, tested the scopolamine-morphine treatment, and concluded that this method satisfied the above conditions; that it not only relieved pain without injurious effects, but insured in many cases a normal, physiological birth, and made operative intervention unnecessary.

I have recently tested this method in the Boston Lying-in Hospital, in 19 cases, 16 primiparous and 3 multiparous. A brief statement of this experience may be of service. Scopolamine hydrobromate and morphia nitrate were so combined that ten minims of the mixture contained $^1/_{200}$ grain of the former, and $^1/_6$ grain of the latter, drug: it was administered by subcutaneous injection.

I. *Primiparous Cases:*

1. Aet. 22. Moaned between pains, and during pains flung herself about the bed, crying out loudly. Minims X of mixture given when os was dilated 1.5 inches: in twenty minutes patient became quiet, complaining but slightly during the pains, and remaining quiet during intervals; dose not repeated. Pulse not affected, uterine contractions not diminished in force, no bleeding or unpleasant after-effects.

2. Aet. 28. After dilatation had reached 1.5 inches, pains became quite severe and patient complained a great deal; M. X dose. In twenty minutes fell asleep and slept for fifteen minutes; thereafter did not complain during intervals, but moaned slightly during pains; no outcries as before injection. During second stage, pains regular and strong; pulse remained good throughout. From twenty minutes after dose was given, patient, as she afterwards stated, was comfortable, content to lie in one position, and was troubled very little by the uterine pains. As soon as baby was born drowsiness passed off, and there were no bad after-effects.

3. Aet. 20. Four hours after admission pains became severe: M. VII given. Shortly after os was found fully dilated and pains became expulsive; marked change in patient's outcries and complaints. Pulse continued good, no bleeding, no after-effects except moderate drowsiness for an hour or so.

4. Aet. 25. Although pains were not severe at entrance M. X given: patient had an easy labor and at no time did she complain much. Effects of drugs not so marked as in Cases 1 and 2.

5. Aet. 21. M. X given after seven hours of labor, repeated two hours later. Patient could feel the contractions, but they were not painful. No untoward sequelæ.

6. Aet. 24. On entrance patient was having strong contractions and was suffering a good deal; dilatation one-half inch. M. X given and repeated in an hour: uterine contractions continued strong and labor advanced rapidly without the patient's complaining of pain. A good deal of vomiting throughout first and second stages. No untoward after-effects.

7. Aet. 23. Dilatation one inch on entrance: M. X given, and patient did not thereafter complain of pain; said she felt a little dizzy soon after injection.

8. Aet. 22. After two hours of labor with dilatation of 1.5 inches was given M. X; was quiet for an hour thereafter. Patient could feel the contractions; but they were not painful. No diminution in frequency of pains.

9. Aet. 26. Very nervous and excitable, crying out with pain. M. X kept patient somewhat quieter; dose repeated in two hours, and patient remained quiet for four hours. No untoward effects.

10. Aet. 26. M. X given one hour after admission, pains being good and strong. Patient said she could feel the contractions but that they did not cause pain. Contractions continued at three to four minute intervals, and the whole first stage was apparently made much easier. A second dose, given 1.5 hours before second stage, had no ill effect on second-stage pains, and patient worked well with her pains. No untoward sequelæ.

11. Aet. 24. Entered after being in labor two hours: os dilated three-fourths inch, pains every ten minutes. M. X given and repeated in two hours. Contractions not affected, and subjective pain not much diminished. A good deal of vomiting throughout first stage.

12. Aet. 25. Dilatation 1.25 inches on entrance; pains every eight minutes, lasting one minute, very sharp, and patient apparently suffered a good deal. M. X, repeated in two hours. Patient quieted down after second dose; and though contractions came more often and lasted longer, patient complained but little until near end of first stage. The drug was pleasing to patient, and she asked for more as the effects of it were wearing off.

13. Aet. 20. On entrance, not very severe contractions. M. X given with no apparent change. Labor easy and rapid, and patient at no time cried out with pain.

14. Aet. 35. On entrance dilatation of three-fourths inch, with good pains, but slow progress. M. X, repeated in two hours, with good results; patient slept for several hours, and labor advanced with contractions of good quality, but not painful enough to cause patient to cry out or moan.

15. Aet. 24. Entered at 9:30 P.M., having contractions every ten minutes, dilatation one-half inch. Very nervous, crying out with each pain, and rolling about the bed. M. X, repeated in one hour; patient then slept until 2 A.M. A third dose, and patient slept until 5:30 A.M.; after that did not complain of the pains, although

she could feel the contractions. Os fully dilated at 7 A.M.; second stage terminated in good time. The influence of the drugs in this case was very marked: on entrance the pulse was 108, and patient was crying out with pain; under the influence of three doses patient slept nearly all night, and at the beginning of the second stage the pulse was 80. There were no untoward effects during labor or afterward.

16. Aet. 20. Entered with a dilatation of one-half inch, and with pains severe enough to cause her to cry out. After a M. X injection was quiet in thirty minutes, and was comfortable for the next four hours, only moaning with her pains. Dilatation was complete 5½ hours after entrance.

II. *Multiparous Cases:*

1. Aet. 21. Two doses of M. X each were given without apparent results, but without untoward after-effects.

2. Aet. 20. The drugs seemed to have little or no effect on the severity of the pains; but dilatation and uterine contractions were not apparently interfered with.

3. Aet. 24. Two doses were given without appreciable effect on patient in relieving pain, but also without untoward after-effects.

As a result of these observations, it would seem that in scopolamine-morphine narcosis we have a valuable addition to obstetrical therapeusis; that while in the few cases observed there was no apparent benefit to multiparæ, the good effects in primiparæ were very marked. The combined use of the drugs seems especially serviceable in primiparæ of nervous, excitable, and hyperesthetic organization; and the best results are obtained when the drugs are given early in the first stage, as soon as symptoms of nervous irritability manifest themselves.

THE ETIOLOGY AND TREATMENT OF PUERPERAL ECLAMPSIA.

This important subject continues to be of engrossing interest both to pathologists and to clinical investigators. A year ago, before this Society, Jewett gave a comprehensive synopsis of this subject; and at the end of another year we must conclude with him that "the precise nature of this affection still remains unsettled." The past year has been prolific in literature; but the most satisfactory exposition I have seen of our present knowledge, or perhaps I ought to say of our present theories, of the true nature of puerperal eclampsia is contained in the paper read by Dr. Charles S. Barnes before the Obstetrical Society of Philadelphia in February last, and in a leading article on eclampsia in the *Boston Medical and Surgical Journal* for March 19, 1903. Following Barnes's paper was a valuable discussion on treatment, introduced by Dr. Wilmer Krusen. It is not within the scope of my paper to traverse the views expressed in this discussion; but I would like to refer to those of Dr. Stricker Coles in regard to prophylaxis. He expressed his belief that by careful attention to early symptoms "90 per cent. of eclampsia can be prevented;" and he further said that he had never seen a patient with a form of eclampsia that could not have been prevented. In support of Dr. Coles' belief, I would like modestly to say that in a practice of twenty-five years I have never had a case of puerperal eclampsia among women of whom I have had the care *during pregnancy;* the many cases of eclampsia I have seen have all occurred in consultation and hospital practice. I ought to say, moreover, that numerous cases have caused me anxiety and watchful care; but that with painstaking attention to diet, to hygiene, to the condition of the nervous system, and to the functional activity of the eliminative organs, these cases have passed safely through their labor and puerperium. However meritorious and successful the treatment of actual eclampsia may be, we must all agree that, as in most other pathological conditions, prevention constitutes the most rational and the most successful therapeusis.

The theory that ascribes eclampsia to thyroid inadequacy and the work of Nicholson on this subject are of interest, and may prove of value. Jewett (*loc. cit.*) believes that Nicholson's conclusions are based on insufficient grounds. I have had no experience with the use of thyroid extract in eclampsia; but it would seem that the theory of thyroid inadequacy and of treatment based thereon are worthy of further investigation.

Any one who has had much experience with eclampsia must be impressed with the fact that, as cases differ in symptomatology, in severity, and in the time of pregnancy, labor, or puerperium at which the seizure occurs, there can be no definite line of treatment applicable to all cases, but that while following certain general principles the obstetrician must treat each case according to its own conditions. There is nothing in the whole range of obstetric medicine in which a wiser and more discriminating judgment is demanded than in the treatment of eclampsia. The limit of this paper forbids that I should attempt a comprehensive review of the many therapeutic measures that have been found of more or less value in the treatment of eclampsia; but I would like to speak briefly of the value of hyoscine (scopolamine) combined with morphine as a means of controlling convulsions and the extreme nervous excitability observed in certain cases. Ether and chloroform have proved efficacious in controlling convulsions when promptly administered before the seizure actually occurs; chloral alone or combined with bromides is serviceable in mild cases and as an adjuvant to other sedative measures; Stroganoff's combined use of morphia and chloral has been successful in the experience of some observers. But recent experience has taught me that in hyoscine and morphia in heroic doses we have a potent agent for the control of extreme restlessness and maniacal excitement. I will briefly report three cases recently observed in the Boston Lying-in Hospital.

1. Primipara, aet. 27, nearly at term, having had three convulsions. Conscious, complaining of severe headache, epigastric pain, nausea, and gen-

eral discomfort. Skin dry, face and legs edematous, tongue bloody, showing teeth marks. Bladder contained 1½ oz. of urine showing one-half per cent. albumin. Fetus alive. Under free catharsis and diaphoresis, and with free use of cream of tartar water, patient improved, and the kidney resumed its function; but on the fourth day patient began to make queer remarks, and shortly became delirious and uncontrollably maniacal. Was given scopolamine gr. $^1/_{100}$ and morphia gr. ¼, repeated in a short time: in twenty minutes after second dose patient became quiet and fell asleep. In 2½ hours she became restless and the dose was repeated, with a chloral enema of gr. xx: patient slept six hours, constant watch being kept of pulse and respiration. On the following morning examination showed that labor had begun: patient kept quiet with hyoscine or scopolamine gr. $^1/_{200}$ and morphia gr. ⅛ every 1½ to 2 hours, p. r. n. The os uteri dilated and patient delivered herself in the morning of the fifth day after entrance: uterus shut down well and there was very little bleeding. In the afternoon effects of drugs passed off, and patient became wildly delirious. Scopolamine gr. $^1/_{100}$ and morphine gr. ¼ given with speedy result. Small doses of these drugs were subsequently given p. r. n., with enemata of chloral. Patient gradually improved, the mind cleared, and she was discharged on the twentieth day, the urine showing a very slight trace of albumin and no renal elements. The baby lived three hours.

2. Primipara, aet. 27, nearly at term, entered with a history of having had a period of unconsciousness the previous night and total loss of sight for several hours. Vomiting almost constant; systolic murmur at apex; twenty-four hours' urine 3 oz., albumin one-half per cent. Labor began twenty-four hours after entrance, and patient became very restless and noisy: hyoscine gr. $^1/_{200}$ with morphine gr. ⅛, repeated in half an hour; this with chloral enemata kept patient quiet and asleep most of the time, hyoscine being repeated at about three hour intervals. When the os uteri was about half dilated, as mental symptoms seemed to be increasing, and patient complained of feeling lost, and talked incoherently, ether was given and delivery effected with high forceps. After labor mother was kept sweating, and small doses of hyoscine were given. Convalescence was highly satisfactory: mother and baby were discharged well, and the mother's urine was in normal amount and showed neither albumin nor renal elements.

3. Primipara, aet. 18, entered in early labor, cyanotic, pulse 130, skin dry and hot, marked edema of ankles, albumin one-half per cent.: diaphoretic treatment begun. Soon had a severe convulsion, followed by another in fifteen minutes: hyoscine gr. $^1/_{100}$, morphine gr. ⅛, and strychnine gr. $^1/_{30}$ given hypodermically, repeated in half an hour. Parts dilated well, and patient was delivered with low forceps under the influence of above drugs and without other anesthetic, having had in all three severe convulsions before delivery. Immediately after delivery patient had the most severe convulsion I ever saw, lasting 1½ minutes: pulse 150, temperature 107.5° F. in axilla. Placed in hot, wet pack, and given hyoscine gr. $^1/_{100}$ and strychnine grain $^1/_{30}$. Later was given hyoscine gr. $^1/_{200}$ and strychnine gr. $^1/_{30}$ every half hour for four doses. In twenty-four hours patient was much improved, kidneys were working well, bowels had opened freely, and profuse perspiration was established. For several days there was impairment of vision, without appreciable organic change; but patient made progressive improvement, the sight became normal, and the mother was discharged well. The baby was stillborn.

RECENT ADVANCES IN THE THERAPEUTICS OF PEDIATRICS.*

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Of the various departments of therapeutics, the one receiving greatest stimulation at this time, and the one affording the most brilliant opportunities, is prophylaxis. And in no department of practical medicine is the preservation of health, or the prevention of disease, presenting a more promising field of usefulness than in the guardance of those in whom we place our hopes of futurity. It is to our posterity that we must look for the continued improvement of science and civilization; the source of national worth and existence.

The advancement of pediatrics is the most important achievement of the profession, as it stands for something more than the selfish present. The idea of "eat, drink and be merry for to-morrow ye may die" has caused the same lessons to be learned by each succeeding generation until now we awaken to find history again repeating itself if the fewer children that are born are not placed under the best possible conditions to permit of proper development.

In harmony with this thought, a paragraph on the normal management of the normal child will serve to present a few of the many recent suggestions.

Loose-fitting garments, hung from the shoulders, have been advocated for years; yet not until recently[1] has it been satisfactorily demonstrated that the clothing usually employed for the new-born, is so binding and burdensome as to restrain muscular development, hinder many functional processes and cause marked skeletal deformity.

The heavy diaper is now causing as much concern to the physician as it always has to the maids; the pressure not only hindering muscular movement and development, but producing deformity of the pelvis and hip joint. Gauze cov-

*Read at the Annual Meeting of the American Therapeutic Society, at Washington, D. C., May 12, 1903.

ered absorbent cotton pads, held in place by a light T-bandage, relieves the embarrassment to all concerned.

This year has again emphasized the fact that breast-fed babies surpass in every respect of development those fed by hand; and that to approximate normal human milk by percentage modification of pure, clean cow's milk, is the best second method.

During the last two years I have proven to my own satisfaction, the usefulness of thyroids in mammary inactivity. This was suggested to me by a primipara who, a few weeks before her confinement, called my attention to a goiter; probably the result of increased activity of the gland occasioned by her condition. Tablets of the desiccated thyroids, equivalent to ten grains of the fresh gland, were prescribed; a tablet to be taken morning and evening. The tumor disappeared gradually and at birth of the child was not noticeable. The case was discharged on the twelfth day. Mammary functions were then normal and the child was thriving. A week later I found the child nursing a dry breast. By continued effort 10 c.c. of milk was obtained for analysis. Thyroids were again administered and milk was secreted in abundance; but the damage that had been inflicted upon the infant's digestive tract required the most careful modification of sweet whey for a period of five months before the enteritis permanently subsided and there was a substantial gain in weight.

Case II.—Mrs. W., gave birth to her first baby March 30, 1901. The functions of the mammæ were never fully established, and the child, fed by hand, died the following summer. In July, 1902, one month before her last confinement, she began taking thyroids; one tablet daily. The baby is now in its ninth month and has been on full rations since birth; although two tablets were required some days to maintain the supply; and a rest on the thyroids would invariably diminish the amount of milk secreted. This child's weight at the eighth month was 18½ pounds.

Case III.—Mrs. B., had not the slightest indication of the "coming of milk" at her first accouchement; not even an increase in the size of the breasts. Five days after her second confinement, February 25, 1903, there was absolutely no mammary secretion, regardless of the massage and other measures. She was given thyroids, a tablet night and morning and after the tenth day milk was secreted in sufficient quantity to satisfy the infant, and at this the tenth week the breasts are supplying full diet and the infant weighs 12¾ pounds.

Case IV.—Mrs. C., nursed her first baby two weeks when the milk diminished and the usual tonics and encouragement failed to restore the function. February 23, at her second delivery the milk was slow in appearing. Thyroids, a tablet night and morning produced an oversupply, and they were discontinued. Two weeks later the supply again grew scanty and a return to the tablets again overstimulated the gland and a second rest on the tablet once more diminished the secretion. The mother was then instructed to take one tablet every second day and the mammary functions have been perfect since. At the eighth week this boy weighed 12 pounds.

Several cases, similar to Case IV, have responded promptly to the administration of thyroids and in no instance have I been disappointed with the results.

Acute infectious diseases in the mother have always been held as contra-indicating maternal feeding, but Neisser's[2] experience with a wet-nurse who had diphtheria, and reports of other cases[3] where mothers, while suffering from an attack of diphtheria, had nursed their infants, without the latter taking the disease, seems to suggest that such milk acts as an antitoxin to the child.

In over one hundred articles written on the subject of infant feeding a few wide variances of opinion are evidenced. Some of these[4] can hardly be classed in the lines of advancement, and can not be discussed in this summary.

Few physicians or mothers will agree with Dr. Winters,[5] that lactation to the eighth month is contrary to nature; and that weaning should be begun after the second month and should not extend beyond the fifth month. According to nature, the mother's milk supplies all the materials necessary for the growth and development of the infant up to the eighth or tenth month; and the average breast-fed baby up to this time surpasses in growth, development and resistance the average of babies fed by any or all other methods.

Nature marks the time of mixed feeding by the advancement of dentition and a more pronounced amylitic action of the salivary secretion, which is from the seventh to the twelfth month, according to the degree of development. It is at this time that we can supplement the mother's milk with modified cow's milk with barley water, or preferably with oat-meal jelly; and carry the baby on to the tenth or twelfth month weaning gradually in seasonable season. After the twelfth month the soft-boiled egg, the bread crust, the gluten cracker, and oat, rice and barley jelly may be added to the milk diet. At no time should the child be given whole milk unless other foods be administered simultaneously to prevent mass curd. Fruit, especially orange juice can be given early, but meat should not be given until after the second year, and even then sparingly. A generous meat diet stimulates increased metabolism and nervous excitation, overworks the digestive system and overtaxes the eliminative organs, leads to various functional disturbances, and, like candy creates a dislike for food more adapted for the growing child.

It is a lamentable fact that "too many babies are put on bottles for lack of rational treatment of the mother"[6] and while some thrive on any combination of food products, the only rational substitute for the mother's milk is pure, clean cow's milk, modified to meet the requirements in each individual case.

During the summer the only milk that can be depended upon for the city baby is obtained from a carefully selected herd of cows, kept under proper management, and the milking and further handling of the milk conducted in a cleanly manner.

The prevalence of mammitis is one of the sources of streptococci in market milk.[7] The common methods of handling milk, the proximity of the stables, the unclean cans, the street drawing and many other conditions open to infection, give us a milk that is dangerous even if pasteurized. Generally speaking, pasteurization is always needed for even the best of obtainable milk, especially in the hot months; and the market milk of cities[8] should not be given to the babies during the summer.

Experiments conducted by the Bureau of Animal Industry, the U. S. Department of Agriculture[9] and other similar investigations justify the following conclusions respecting the infection of milk from tuberculous cows:

"(1) The tubercle bacillus may be demonstrated in milk from tuberculous cows when the udders show no perceptible evidence of disease, either macroscopically or microscopically. (2) The *Bacillus tuberculosis* may be excreted from such an udder in sufficient numbers to produce infection in experimental animals both by ingestion and inoculation. (3) That in cows suffering from tuberculosis the udder may, therefore, become affected at any moment. (4) The presence of the tubercle bacillus in the milk of tuberculous cows is not constant but varies from day to day. (5) Cows secreting virulent milk may be affected with tuberculosis to a degree that can be detected only by the tuberculin test. (6) The physical examination or general appearance of the animal cannot foretell the infectiveness of the milk. (7) The milk of all cows which have reacted to the tuberculin test should be considered as suspicious, and should be subjected to sterilization before using. (8) Still better, tuberculous cows should not be used for dairy purposes.

Anemia is one of the common neglected conditions, the result of many sins of omission; dental decay,[10] resulting in local and general sepsis, insufficient mastication and chronic indigestion; nasal stenosis and adenoiditis, resulting in chronic catarrhal conditions of the respiratory passages, physical weakness, and mental apathy; eye-strain and ear inflammations that produce an inexhaustible train of symptoms; these, and many other similar ailments should receive more general and more prompt attention.

A symptom that demands immediate relief is convulsions. They may be simply reflex and well likened to the chill of the adult, nevertheless they can and do produce great and lasting damage; and every attack should be shortened as much as possible. Likewise in asphyxia neonatorum, pertussis paroxysms, and any condition that might produce intracranial hemorrhage, or increase cerebral hyperemia, resulting in encephalitis, paralysis, epilepsy, idiocy or death.[11]

In my experience convulsions, hysteria and epilepsy are invariably associated with chronic intestinal indigestion, but Smith[12] insists that in instances where the fits occur in a child whose digestive system is temporarily disordered, we may reasonably expect complete cessation of symptoms and permanent restoration of health by proper treatment.

A further step in prophylaxis would be the prompt report and isolation of all contagious diseases. This is possibly only where inspection of schools is conducted by competent physicians. Measles and pertussis are causing more distress and death than many of the other contagious diseases. During 1902 in 18 of the large cities in this country, there were 806 deaths due to variola, 986 due to measles and 1,238 due to pertussis. In London, in 1901, scarlet fever caused 590 and diphtheria 908 deaths. During the same period deaths from pertussis numbered 1,589 and deaths from measles numbered 1,952.

"The four winds blow in from every coast," reports of successful discoveries of antiscarlet fever serum. Baginsky[13] found streptococci in 696 out of 701 scarlet fever throats and concluded that the streptococcus is the cause of scarlet fever. However, treatment with Marmorek's antistreptococcus serum proved negative. Aronson's serum[14] from horses injected with streptococci from scarlet fever subjects was decidedly encouraging. This rather supports the claim of Class and Jaques,[15] who have for several years differentiated these organisms.

Moser[16] obtains a serum in the same manner as Aronson and in 84 cases of all grades where it was used, 68 recovered, a mortality of 19.4 per cent. Of 26 cases treated by Baginsky with Aronson's serum, 23 recovered, a mortality of 11.6 per cent. Fisher[17] used Aronson's serum in two cases and claims the effect on temperature, which comes down by lysis, shows that it inhibits bacterial products.

Right in the midst of this comes Charlton[18] with the statement that in scarlet fever the streptococcus leads to secondary infection and that antistreptococcus serum is therefore indicated. He reports its use in 15 cases with 2 deaths.

The antidiphtheritic serum has been used and is recommended by several good men[19] for scarlet fever, measles, bronchopneumonia and a dozen other infections, but in a short review the merits of these cases cannot be considered.

Recognizing gastro-enteric infection in children to be more easily prevented than cured, the claims of Drs. Flexner and Hurd, if correct, will simplify the treatment of some of these disorders. "Since the bacillus of cholera infantum (possibly the bacillus of ileocolitis intended) has proven to be identical with that of dysentery," (Shiga bacillus) the disease must yield to the same antitoxin; and this new serum is advanced to a state of perfection that the promotors unhesitatingly announce that its use directly destroys the germs in the blood, and a recovery is a scientific certainty in uncomplicated cases.

Measles (Weisbecker) and pertussis (Welch) have been shown to be amenable to serum injection obtained from recovered cases. Silvestri[20] used the serum of convalescence from whooping-cough in seven cases of the disease. From 15 to 20 c.c. of the serum was injected in each. All were relieved, and in but two had the injection to be repeated.

The interest generally manifest in the treatment of pneumonia, has been shared by the pediatrician. The usefulness of guaiacol or creosote carbonate has been demonstrated in numerous instances.[21] Potassium guaiacol sulphonate is claimed[22] to have a specific action in this disease, bringing about a crisis in from twenty-four to seventy-two hours, and making the use of antipyretics unnecessary. It appears to me that large doses of quinine, for its effect upon the leucocytes, and hot mustard baths, for equalizing the circulation, are indicated in the first stage of all pneumoniæ. However, infants occasionally suffer more from the vigorous medication than they do from the disease.[23]

In lobar pneumonia the treatment is simplified, the disease being self-limiting; the main object being to support the strength by suitable food. Breast-feeding babies can be continued at the breast, but bottle-fed babies should have further diluted or predigested food. Water is all the antipyretic needed, although the cold plunge should never be used. Cough and restlessness can be controlled by Dover's or salicylacetal. Alcohol, in small doses, may be given for its sedative effect, and strychnine is the only stimulant to be depended upon. For collapse, which should be avoided, the hot mustard bath and vigorous rubbing is of greatest value.

In conclusion, permit me to mention the interesting fact that lumbar puncture has become a valuable therapeutic as well as a diagnostic measure. In the various forms of meningitis this procedure is of greatest value in relieving pressure symptoms. Rotch[24] mentions a case where the fluid was allowed to drain off and the child became brighter immediately and eventually recovered. Griffith[24] reports temporary relief in tubercular meningitis, while Golden[25] reports the complete recovery of a tuberculous meningitis after the withdrawal of 14 c.c. of cerebrospinal fluid. Warrington[26] reports three cases with two deaths. The *Diplococcus intracellularis* was present in one of the fatal cases and the *Staphylococcus albus* in the other.

Babinski[27] reports an interesting case in a girl, twelve years old, who completely recovered, with exception of deafness, after three lumbar punctures, and six months after the last operation there had been no return of the symptoms.

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MEDICAL PROGRESS.

OBSTETRICS AND GYNECOLOGY.

Fetal Ascites with Dystocia.—A most interesting case of this variety occurred in the practice of Stanley P. Warren (Am. Jour. of Obst., Aug., 1903). The fetus, which was male, and weighed six pounds, had been dead several days. The obstruction to delivery was an enormous enlargement of the abdomen, due to ascites to the amount of 550 c.c. of fluid. The liver was not enlarged, and the other viscera of the peritoneal cavity appeared to be healthy. The mother had a flat pelvis. The source of the fetal ascites could not be determined, as no microscopic examination of the fetal organs was made. Ballantyne (Antenatal Pathology and Hygiene), of the 65 cases reported, fetal ascites was due to syphilis in eight cases, and in 19 to hydrammios. Chronic peritonitis, less frequently acute, was found in 50 per cent. of the cases autopsied. In 36 cases out of 45 there was premature termination of pregnancy, and in 4 cases out of 64 the mother died from prolonged labor and operative violence. The fetus dies just before birth, or soon after; in one case it lived after paracentesis, with the removal of 500 c.c. of fluid. Under ordinary conditions birth must be effected by traction, more or less difficult, depending upon the amount of distention of the flat abdomen, by aspiration, or by embryotomy. Any or all of these methods being necessarily combined.

Treatment of Retroflexed Uterus.—On examining single or married multiparous women, one will often find a movable retroflexed uterus without other complications. These patients may complain a good deal of backache and reflex nervous symptoms, and yet there is nothing in the pelvis to account for this. P. Winternitz (Therap. Monatsch., Aug., 1903) believes that the condition is chiefly one of hysteria, induced by frequent examination and not relieved by a surgical procedure. It is best to treat such cases medically, but the diagnosis must be absolutely certain. In a second group the patients have given birth to children, the uterus is displaced backward, and the pelvic floor is uninjured. Enlargement of the uterus frequently exists, and the pains invariably disappear, if the organ is fixed in anteflexion. The most discomfort is experienced where there is also a rent in the pelvic floor and where the uterus is prolapsed, as well as retroflexed. Here the prolapse demands more attention than the backward displacement, and a celluloid ring will often give much relief. The last group is made up of cases where the fixation is due to some complication as diseased adnexa. Surgical interference will always be necessary here.

Sarcoma of the Uterus.—It is important to carefully watch fibromyomatous growths of the uterus, for

sudden increase in size, since the figures of W. EVELT (Münch. med. Woch., Aug. 18, 1903) show that sarcoma is not of such rare occurrence as some statistics seem to indicate. It is often very difficult to decide if a fibroid has become malignant, but if the uterus enlarges considerably within a short space of time, the case is at least suspicious. The physical examination, especially if aided by intra-uterine excision of a small piece of the tumor, is of more value than the symptomatology. The patients are usually between forty and sixty years of age, but cases at thirty years are not rare. The prognosis after operation is good, and metastases need not occur, even if the tumor was large.

Prophylaxis and Therapy of Puerperal Fever.—Some valuable statistics on puerperal fever are contained in the article of H. FEHLING (Münch. med. Woch., Aug. 18, 1903). The infection resulted fatally in 17.7 per cent., and in 25.8 per cent. of these, an obstetrical operation was necessary to hasten delivery. Operations performed in the clinic were as follows: Manual separation of the placenta, 47.1 per cent.; forceps extraction, 13.6 per cent.; version, 12.3 per cent.; breech extraction, 8.6 per cent., and perforation, 7.4 per cent. With the fatal cases the figures were as follows: Manual separation of placenta, 68 per cent.; version, 12 per cent.; forceps extraction, 8 per cent.; perforation, 8 per cent.; extraction of breech, 4 per cent. The cause of death was pyemia, 38.8 per cent.; sepsis, 26.9 per cent.; septicopyemia, 14.9 per cent.; peritonitis, 8.9 per cent.; parametritis, 4.5 per cent.; tumors of the adnexa, 3 per cent.; endometritis, 1.5 per cent.; suppurating ovarian cyst, 1.5 per cent. The mortality of the various conditions was: Septicopyemia, 100 per cent.; sepsis, 85.7 per cent.; peritonitis, 85.5 per cent.; pyemia, 72 per cent. The lesson to be drawn from these figures is that manual extraction of the placenta is still a dangerous procedure, despite all asepsis. Expectant treatment should first be tried: If a severe atonic hemorrhage appears, the uterus must be massaged or else early expression is resorted to. With great exhaustion during the pain or in placenta previa, Credé's method is indicated. If expression does not succeed, and the patient's condition is critical, another attempt should be made in narcosis. Very careful sterilization of vulva and vagina should precede introduction of the hand, and the anus should be covered by a piece of iodoform gauze. The infection is almost always introduced by means of the hands, which very often contain germs under the nails, despite most careful scrubbing. Rubber gloves are recommended very highly for septic or suspicious cases, so that the bare skin never comes in contact with virulent germs. Their disinfection is very simple: they are merely washed with soap and brush, then with a disinfectant, and finally boiled shortly before use. Very little new can be added to the treatment of sepsis. Hysterectomy has not given very good results, and is only indicated where the sole source of infection lies in the uterus, as with a supporting placenta or myoma. Occasionally the pulse and temperature dropped when 10 to 20 c.cm. of a 2-per-cent. solution of colloid silver was injected directly into the veins, but the injections must often be repeated for eight to ten days, since the fever usually reappears. The main safeguard against infection still lies in the prophylaxis.

Treatment of Hematocele.—It is proven beyond doubt, according to P. ZWEIFEL (Münch. med. Woch., Aug. 25, 1903), that the growing ovum erodes the walls of the Fallopian tube in tubal pregnancy, and actually pierces the peritoneal covering. Whether the hemorrhage will be moderate or severe depends solely upon chance. There is no rule as to the time of appearance; a patient may bleed to death in the earliest weeks of pregnancy, as well as later on. By far the greatest number of hematoceles is a result of pregnancy, either due to rupture of the serosa in a place not marked by great vascularity, or else due to a tubal abortion. An erosion of the tube is probable when a pregnant woman is suddenly seized with severe abdominal pains, vomiting and small pulse, without fever. In desperate cases the abdomen is opened quickly and a clamp applied to the bleeding tube, then an anesthetic is given and salt solution injected into the veins. The tube is tied off as the patient goes under, and then all blood is carefully removed from the abdominal cavity. The narcotized patient may even be raised to allow the blood in the neighborhood of the diaphragm to flow into the pouch of Douglas. Secondary severe hemorrhages, where a hematocele already exists, are generally due to secondary rupture of the tube, and not to bursting of the hematocele. It follows from this that an apparently latent hematocele, not older than two to three weeks, still demands early operation, to avoid subsequent accidents, which occur in about 4 per cent. In a hospital it may, however, be permissible to wait, since an operation can be performed at a moment's notice. For hematocele of some duration, the expectant treatment is in place, unless suppuration occurs, or the pains are severe. If possible, an operation should be deferred until the mass of blood is well encapsulated. The best procedure is posterior colpotomy, but care must be taken not to rupture the capsule, or leave behind the clots in the tube about the ovum. These patients can generally get up in fourteen days. Where a clot remains behind, the writer does a laparotomy to remove it, and then carefully shuts off the cavity from the rest of the peritoneum. Expectative treatment in no way interferes with subsequent conception, since the tube apparently returns to its normal condition. The absorption of blood may occur rapidly or slowly, and there is little the physicians can do to hasten it. Application of iodine has been recommended, but rest and hydrotherapy give better results.

Gigantism in the Newly Born.—Two remarkably heavy fetuses were observed by H. FUCHS (Münch. med. Woch., Aug. 18, 1903): one weighed 6100 gms. (203 ounces), and the other as much as 7550 gms. (252 ounces). Both were dead and macerated when born, but the maceration cannot be held accountable for the enormous weight, since this is more apt to cause a diminution. Syphilis could be ruled out in both cases with certainty, since the spleen was relatively very small. The mother of large children are generally large and strong; the constitution of the father plays a less important part. Frequently the mother has already borne large children. The following factors seem also to have some influence from the analysis of a large number of cases: (1) Age of the mother. This was generally found to be between twenty-six and thirty-five years. (2) The first appearance of menstruation. When this was early the children are more apt to be large. (3) Sex of the child. Heavy children are usually males. (4) Method of life during pregnancy. Rest during this period increases the weight. (5) Duration of pregnancy. In 20 out of 201 cases, pregnancy lasted 303 to 341 days.

Cæsarian Section for Placenta Previa.—In treating of this subject, with special reference to the life of the child, F. D. DONOGHUE (Ann. of Gyn. and Pediat., August, 1903) says that the conservative Sänger-Cæsarean section should be performed in cases of (1) complete previa; (2) previa in primipara in the absence of severe hemorrhage or rigid os; (3) when there is a history of previous operative delivery; (4) it should be

considered in all cases where version is indicated, if a reasonably skilled surgeon is available and only an ordinary obstetrician; (5) all these indications are based on a probable viable child, twenty-eight weeks of gestation and upward. Finally, it is urged that (*a*) the operation should be performed through the left rectus muscle; (*b*) incision of the uterus is not usually followed by hemorrhage, even when the broad ligaments are not constricted; (*c*) time should be allowed for contraction and retraction of the uterine fibers before the placenta is removed; (*d*) if sufficient time is allowed for this to take place, no blood will be lost from the beginning to the end of the operation, and if severe hemorrhage has preceded operation the abdomen can be filled with saline solution before it is closed; (*e*) the shock of such an operation is certainly not greater than that of version or forceps in a woman already exhausted, and (*f*) within a few minutes of starting, the indications of treatment—(empty the uterus and control hemorrhage) will have been fulfilled.

Anterior Vaginal Hysterotomy.—Some six years ago Prof. Dührssen recommended the so-called vaginal Cæsarian section for certain cases requiring artificial delivery. In a recent article he stated that up to the present day there were reported some sixty cases of this operation for various indications. According to D. S. Rosenfeld (Roussky Vratch, No. 29, 1903) Dührssen performed the operation in cases where he aims, in the presence of a closed and undilatable cervix in conjunction with absence of pains, to produce an opening, without resorting to a laparotomy, through which the fetus could be extracted. As an absolute condition for the performance of the operation he considers a conjugate of at least 8 cm. The anterior fornix is cut through, the bladder separated, then the anterior wall of the cervix and body of the uterus is incised, and the same is done with the posterior wall, after a preliminary separation of the peritoneum of Douglas' cul-de-sac. The fetus is then rapidly extracted, usually by the aid of a podalic version, the placenta removed, and the uterine openings sewed up and tamponed. Later on Dührssen formulated the following indications for this operation: (1) Anteversions of cervix and lower segment of uterus (as in cancer, myoma, stenosis) that preclude the possibility of cervical dilatation in the presence of pains; (2) dangerous conditions of the mother, as cardiac, renal or pulmonary diseases, which may be relieved by emptying the uterus; (3) dangerous condition of the mother which may become fatal antepartum. The author operated on two cases, one of severe eclampsia, the other of placenta previa, in either of which routine treatment seems to have been of no avail, only exhausting the patients unduly. The operation was successful in both cases, and is evidently preferable in certain cases to laparotomy.

Laws of Puerperal Immunity.—Though highly sensitive to infection from other sources, the puerperal woman enjoys a certain immunity from auto-infection, according to E. Corminas (Rev. de Cien. Méd. de Barcelona, No. 4, 1903) who enunciates the following two laws concerning her exemption from serious infection through mammitis: (1) A puerperal woman affected with acute mammitis never dies of puerperal infection. (2) A puerperal patient affected with acute suppurative mammitis is never fatally infected with her own pus. Though there is a tendency for the woman to convey with her hands pus from a mammary abscess to other parts of the body, especially to the genital regions, the author finds that she never dies in the puerperium under these conditions. Similarly, metritis and vaginitis never prove fatal if associated with mammitis; whether the latter be suppurative or not, and whether it precedes or occurs in the course of the former affections. The author's theory concerning the relative immunity conferred by mammitis is that the virulence of the bacteria is attenuated by the products of the glandular reaction to infection; and these products circulating in the blood exert somewhat the same influence as certain serums; and he likens the influence of mammitis preceding metritis to preventive serum-treatment and mammitis occurring in the course of metritis to curative treatment with serum.

Typhoid Suppuration of Ovarian Cysts.—Suppuration of ovarian cysts is not an infrequent complication in the course of their development, and various microbes have played the rôle of the causative factors in this suppurative process, not only streptococci, but also gonococci, tuberculous bacilli, typhoid bacillus, and several varieties of saprophytes. On entering the cyst either through the vascular system or directly from neighboring organs, such as the peritoneum or the tubes, the various microbes find here a fertile soil for their development, either in the contents of the cyst, or in the solid parts of the tumor, especially if the latter have undergone nutritive changes on account of the twisting of the pedicle or for other reasons. P. V. Zantchento (Roussky Vratch, No. 30, 1903) reports a rather rare case of cystic suppuration due to typhoid bacillus which not only proves the pathogenetic nature of the bacillus but also its viability in the human organism. The patient, several months prior to admission to the hospital, underwent an attack of typhoid fever, after which she observed in the lower part of the abdomen a swelling that increased daily and was very painful, so much so at times as to prevent her from sleeping; she also suffered from evening chills followed by fever. Examination elicited an immovable hard swelling in the abdomen, which (the abdomen) in its largest circumference measured 89 cm. The uterus was found in a condition of retro-lateroversio dextra, and immovable; its length 9 cm. A diagnosis of a possibly suppurating cyst of the left ovary was made which required removal. The carefully extracted entire cyst measured 85 cm. in circumference, and contained on its lower surface several small tumors, each of them filled with a thick, white fluid; the walls were 1 to 2 millimeters thick consisting of dense connective tissue covered internally with a layer of cylindrical epithelium. The remaining mass of the tumor consisted of a large space filled with greenish yellow, odorless pus. Colonizations from this matter gave undoubted typhoid bacilli, as was fully demonstrated by comparison with other colonies, as well as by experiments on a guinea-pig (the minute particulars of this cannot be gone into here). There is no doubt in the author's mind that the suppuration of the cyst in this case was due to infection by Eberth's bacillus which was transferred to the locality by the circulation, and there found a favorable medium for its development. Similar cases had been observed and described by Werth, Pitha, and Wallgren, all in dermoid cysts of the ovary.

Posteclamptic Amnesia.—The case of a woman who lost all memory of her pregnancy and parturition immediately after an eclamptic seizure the day following the birth of her child, is reported by A. Besson (Jour. des Sci. Méd. de Lille, July 25, 1903). The patient retained complete recollection of other details of her life notwithstanding the obliteration of memory concerning her pregnancy and parturition. This state of mind continued for three days; at the end of which time, memory gradually returned and ten days after childbirth her mental condition was perfectly normal. The author leans to the belief that the same cause—auto-intoxication—was responsible for both conditions.

THERAPEUTICS.

Suprarenal Opotherapy in Vesical Atony.—In view of the favorable effects seen in the treatment of atony and dilatation of the stomach, atonic constipation, and intestinal paralysis with derivatives of the suprarenal capsule, G. Moresco (Gazz. Osped., Aug. 16, 1903) deemed it not improbable that cases of idiopathic disturbance of the motor function of the bladder—that is, those in which urinary retention is dependent upon diminution or abolition of the normal contractility of the bladder's muscular fibers, might be favorably influenced by this line of treatment. In a preliminary article, the author describes the results obtained in two cases of complete retention. Daily injections into the bladder of 5 ounces of a 1 in 25,000 solution of adrenalin, served to establish spontaneous micturition within a period of about two weeks; so that both patients were enabled to empty the bladder almost entirely without the use of the catheter, upon which they had hitherto been dependent. One patient was discharged as completely cured, and the other, who did not respond as rapidly to the influence of the drug, was still under treatment at the time of writing.

Trigemin, a New Analgesic.—This new remedy is a chemical derivative from pyramidon, produced by the action of butylchloralhydrate on the latter. Clinical tests with this drug have lately been made by Overlach (Berl. klin. Woch., Vol 40, No. 35), which seem to demonstrate that it has a specific action on the painful affections of the cranial nerves. It does not produce any gastric irritation, and has no effect on the heart, as the two constituents neutralize each other. It can, therefore, be employed in organic heart disease. Favorable effects were observed in headaches from exertion, in those from influenza, alcohol, migraine, etc. It is also of particular value in occipital neuralgia and facial neuralgia, both in extensive and localized types, and in tooth-ache. The adult dose is from 0.5 to 1.2 grams; a moderate dose once or twice daily is usually sufficient. The preparation is a German one, manufactured by Lucius & Bruning.

Theocin as Diuretic.—By means of graphic curves, K. Thienger (Münch. med. Woch., July 28, 1903) demonstrates that theocin, a xanthin compound derived from tea leaves, is really an excellent diuretic in congestive hydrops. In ascites due to cirrhosis of the liver and in inflammatory exudates the results were not so brilliant and where heart and kidney were normal and the serous cavities free from fluid, the amount of urine voided was not influenced at all. The usual amount given was five grains three times a day. Bad effects are rare, and chiefly involve the alimentary or nervous system; renal irritation never occurred. Cardiac action and blood-pressure rarely changed under the influence of the drug. The first dose is generally the most efficient and is followed by more marked diuresis than subsequent doses. By combining with hedonal, all possible excitation is generally avoided.

A New Cholera Vaccine.—Although both the Haffkine and Kolle methods, when properly applied, give rise to a good immunity in the inoculated, there is little hope of their practical application on account of the severe local reaction and constitutional symptoms. In a search for a practical vaccine, R. P. Strong (Am. Med., Aug. 15, 1903) first studied the local reaction and toxic effects produced in animals after the injection of both a very virulent cholera culture and also one, which, through cultivation on artificial laboratory media for a period of nine years, had lost most of its virulence. It was found that the local reaction after the injection of the latter (the avirulent type) was much less than after injection with virulent cholera spirilla. The character of the serum derived from both series of animals was then studied and it was found that the value of the serum in both agglutinating and bactericidal powers from the "virulent" animals was in no case twice the value obtained from the "avirulent" treated animals. As there was still some local reaction, the author endeavored to do away with the bacterial cells, if possible, and to extract the immunizing properties from the bodies of the bacteria. After repeated trials it was found that by autolytic digestion of the killed spirilla in aqueous solution, cholera receptors were set free in great abundance in the fluid, which, after filtration, were easily demonstrable by the fact that such filtrates could be shown to possess the power to bind cholera uni and amboceptors (agglutinin and bacteriolysin) in a cholera immune serum, as well as by their power to give rise after injection into rabbits to the appearance of bactericidal and agglutinative substances in the blood serums of these animals. This filtrate was therefore used in a series of protective inoculations in animals and it was demonstrated that the injection of 1 c.c. of "virulent" vaccine filtrate protects guinea-pigs after a week against the injection of five times the fatal dose of cholera spirilla. The injection of filtrates obtained from digestion of the avirulent stem likewise give rise to immunizing properties in rabbits, but the sera obtained are from one-fifth to one-twelfth as strong as those obtained from the injection of corresponding amounts of "virulent" filtrates. It seems therefore that this is a very efficacious form of vaccine which gives rise to only the slightest local reaction. The author proposes to extend these preliminary researches at a later date.

Therapeutic Value of Rheumatin.—The fact that substitutes for salicylic acid are constantly appearing, demonstrates the want of an ideal specific remedy for articular rheumatism, one that is entirely free from harmful after effects. Among the later preparations is "rheumatin," which is a combination of salicylic acid and quinine, and has been favorably reported on by a number of observers. J. Siegel (Berl. klin. Woch., Aug. 3, 1903) has carefully watched its effect in 40 cases of acute and chronic articular rheumatism, administering it in daily doses of from 2 to 6 grams, depending on the age and severity of the case. It being an odorless and tasteless powder, patients take it readily, and no unpleasant sequelæ have been observed. It may be recommended in all cases of acute articular rheumatism, especially where there is any attending cardiac or nephritic complication, and also in cases where other preparations have been ineffective or could not be retained. In subacute and chronic cases where it becomes necessary to change the medication, rheumatin is of particular value to enhance the effect obtained by the administration of aspirin or salicylic acid. The author thinks that the drug may also be of value in neuralgic or purely nervous pains, as it is evidently perfectly harmless.

Active Substance of Yeast.—By extracting yeast with absolute alcohol, E. Roos and O. Hinsberg (Münch. med. Woch., July 14 and 21, 1903) obtained a fatty principle, which they called cerolin and which seems to possess all the active properties of yeast. As a laxative it brought about a mild action in most cases without griping and without subsequent constipation. In furunculosis and acne its efficacy was unquestionably equal to that of the yeast itself. The usual dose is one-to-two decigrams (1½ to 3 grains) three times daily. It is possible that the action may be enhanced by combining with lime and forming a soap.

The Medical News.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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SATURDAY, OCTOBER 10, 1903.

UNION.

The New York State Medical Association has taken the first definite step towards bringing about a unification between its own members and the members of the New York State Medical Society. Next Tuesday, October 13, the Society will meet in New York, and will, we hope, respond to the Association's invitation to appoint a committee of five who shall meet the Committee of Five appointed by the Association, and be likewise empowered to do whatever is necessary to bring about a union in a just and equitable manner.

There has always been a large number of right-minded men in the New York State Society who stood for justice and manhood in the profession, and who could not conscientiously stand upon the former platform of the New York State Association. They are still in the Society, but now they are holding out their hands in greeting to the Association, which has been led, through the good sense of its members, to abandon certain unwise and obsolete points of view.

But there are also in the Society certain politicians who have been using with good effect the ethical arguments of their more famous and honored brethren to keep the two bodies of physicians apart. To amalgamate them will not serve the personal interests of these crafty individuals, therefore it is possible that on Tuesday they will use every means of opposing the appointment of the delegates with power to act in the reconciliation.

We wish, therefore, to make it plain to every member of the Society, that the ethical reasons that once divided the physicians of the State into two bodies no longer exist. The factions and dissensions of the past years are a source of regret and shame to members of both bodies alike, with the possible exception of a few who may have derived personal advantages from the division. The leading men of both bodies earnestly desire unification, and sought steadfastly and persistently to bring it about. To this end a circular letter has been sent to each member of the Society quoting the resolutions of the Association, as published exclusively in the Medical News of Oct. 3. Dr. A. T. Bristow, the President of the New York State Society, says in this circular letter, that since radical action had been taken at the annual meeting of the American Medical Association in New Orleans, which in the judgment of the Conference Committee, as well as of the Presidents, had removed the obstacle which hitherto had prevented unification, the Society's committee requested the New York State Association to appoint a new committee for further conference. This plan that each body of physicians should appoint a committee of five, is the answer of good-will on the part of the Association.

If the Society fails to fall in with the plans, the only inference we can draw is that the men who have personal interests to serve by keeping up a faction in the State have worked their wires well. Now that every cause for objection has been removed, it would be outrageous if the old dissensions, which have ceased to exist, should be revivified, under some ethical pretense, and the physicians of the State be still forced to divide themselves into separate camps. We urge upon the attention of every member of the New York State Society the fact that the useless, unhappy and undignified separation of years can be effectually terminated next Tuesday by simply appointing a committee of five with power to act, to meet the committee already appointed by the New York State Medical Association; also we urge him to single out and satisfy himself of the underlying reason for any dissenting voices that may be heard.

It is the plain duty of every member of each

body to use his influence for the dignity of a united profession, instead of one divided by small personal jealousies.

THE HEALTH OF COLLEGE GIRLS.

How much unsound philosophy is rocked out on summer piazzas and made the basis of decision for winter's work! We have tarried here and there for sufficient time to hear the views of many mothers, who, in recounting to the confiding ear the delicate or peculiar constitution of their daughters, have concluded that "Health is so much more precious than intellectual attainments," that the "loving, watchful mother care alone" can keep the fragile anemic girl in health. And we have rocked sympathetically on other piazzas where the college-bred daughters have arrived glowing and hungry after a twenty-mile row and stripped off their sweaters and recounted their adventures with the enthusiasm of their brothers.

A very well-written study of the "Health of University Girls," by Dr. May E. B. Ritter (*California State Journal of Medicine*, July), places the cause of ill-health in such girls as do break down at college where it justly belongs, in the poor hygiene permitted by their mothers in their early school days, and in the lack of preventive medicine taught by physicians in the homes where they attend children.

Dr. Ritter states emphatically that college life, far from injuring the girl student, is in most cases beneficial to her health. As medical examiner in the University of California for thirteen years, she found that all but about 23 per cent. of girls entering college had some form of ill-health due to unhygienic living, or the sequelæ of infectious disease.

Headaches, constipation, indigestion, anemia, or menstrual disorders were present singly or combined in three-fourths of the students on entrance; as a result of hasty breakfasts, cold lunches, lack of outdoor exercise, inadequate sleep, and bad habits of posture in early girlhood. In many cases improved health and remarkable gain in weight was noticed, especially among the anemic girls, as soon as their life included proper food, regular diet and plenty of sleep, and this was in addition to the nervous strain of study.

The question of posture in childhood has, according to Dr. Ritter's observation and reasoning, much to do with menstrual difficulties of girlhood, and the semi-invalidism of many women; and she reduces the "stand up straight" dictum to its elements, showing that in our biological growth from the anteroposterior position to the erect, the weak point is the knees, and that to make up for poorly developed leg-muscles and good knee postures, the young girl seeks to rest herself by standing with one hip thrown out, or the whole abdomen thrust forward. Naturally the internal organs that before the days when we had "diseases, accomplishments and sins," were swung easily between four feet, grow crooked, when they are held in a distorted vertical frame.

But these questions are not discussed on piazzas —rather the "inability of my daughter to take anything but a cup of coffee for breakfast," and the "constitutional delicacy of my niece, inherited from her poor dear mother." We agree with Dr. Ritter that it behooves physicians, after they have rested from the exciting chase of discovery down the lines of specialism, to devote themselves seriously to the art of preventive medicine.

THE ACTING ASSISTANT SURGEON OF THE ARMY OF THE UNITED STATES.

The medical profession of the country has occasion to actively assert itself to-day, to vindicate and protect its own rightful dignities and those of its representatives, who, as Acting Assistant Surgeons of the Army, have—to the number of more than 7,000 in our last two wars—given heroic, distinguished and invaluable service in camp, field and hospital.

Attention has recently been especially called to the injustice long done these *de facto* (but not *de jure*) medical officers, by the Government, and through them, to the profession they represent, by the clear and convincing statements of a paper on "The Acting Assistant Surgeon of the Army of the United States," read before the Association of Military Surgeons of the United States, by Major Azel Ames, late Brigade Surgeon, U. S. Vols., at its May meeting in Boston, published in the September number of its journal, and deservedly attracting wide attention from the medical press and the profession.

Recent added indignities have needlessly made the offensive designation of "contract surgeon," the official title of this officer, to the exclusion of the honorable and fitting one, in use for half a century; have stripped him of the insignia of rank he has so signally honored; and (by a late decision of the Judge Advocate General of the Army), have decreed that, being a civilian only,—though held to all the duties, dangers, responsibilities and amenabilities of commissioned sur-

geons—he cannot even require the enlisted nurse, or hospital-corps man, heretofore under his command, to obey any order he gives.

It is needless to remark that this last degradation of the Acting Assistant Surgeon,—which has seemingly been the desire and delight of certain Administrative officers—has made him utterly useless to the Army, and removes the last vestige of his self-respect and the respect of others, if he remains in the service under these humiliations.

The whole trouble lies in the unwillingness of some few Administrative officers of the Army and—through their influence—of Congress, to give the Acting Assistant Surgeon, what all the oldest and ablest officers of the Army, both line and staff, have long asserted he ought to have, viz.: *commissioned* (temporary) rank.

To expect the medical profession of the country to longer endure such indignity itself, or to permit the injustice and hardships imposed hitherto upon its representatives—so eagerly sought when war's emergencies are on—or to itself hold fellowship with men who will subject themselves and the profession to such humiliation, would be to add insult to injury and throw contempt upon the service and the honor its members have done the country, again and again, upon its urgent call.

The rightful respect and recognition to which the educated profession is entitled, by virtue of centuries of skilful ministration and unselfish devotion to the sufferings of humanity, are being quite sufficiently impaired by the isms, fads, "pathys" and frauds thrust upon this most credulous age, without the Government (which owes it so great a debt of gratitude and of which it is a mainstay) failing in its reciprocal duty, or in justice to the men it borrows to its service, in time of need.

No one will question that whatever is just and right, the medical profession of this country *unitedly demands* of Congress, or the Administration, for those of its number who serve the country with its forces, will be promptly granted. It has not hitherto exercised a proper *esprit de corps* in this regard.

The matter takes on moreover, additional interest from the fact that the Army Medical School has not sufficient field for proper work, in the limited number of the Medical Corps of the Regular Army, and will reach only a portion of the medical staff of the National Guard. Neither of these contingents needs its training or instruction, for work with troops in the field, as does that called suddenly from civil life, as Acting Assistant Surgeons. By the adoption of a simple but efficient method of (correspondence) instruction and examination, rigidly carried out, under a proper enabling Act of Congress, designating in each State, an adequate number of young practitioners, as Medical Cadets of the Army (under such special distinctions and privileges as to give the position prestige, and cause it to be sought), who would be, in case of war, the temporary, *commissioned* Acting Assistant Surgeons, the instruction of the Army Medical School could be made to reach effectively the very element upon which reliance *must* be placed in emergency, and which most stands in need of this instruction.

A great mutual benefit may thus be reaped by the profession, the Army and the Country, and all the equities be duly regarded as never before. It is much to be hoped that those best informed will agree upon and frame a bill to lay before Congress, to meet the case, and that the profession will strongly support it.

ECHOES AND NEWS.

NEW YORK.

Infant Diarrhea.—There will be a joint meeting of the workers of the Rockefeller Institute and the New York Pathological Society next Wednesday at the Academy, where a full discussion of the subject of infantile diarrhea will take place. All practitioners of the city are invited.

"Lung" Block May Have to Go.—The Tenement House Commissioner of this city has proposed to the Board of Estimate and Apportionment the scheme of taking that district known as the "lung" block for a public park. The commissioner in his recommendation spoke as follows: "Many of the houses in the block are permanently infected with the germs of tuberculous disease. Certain of these houses, namely those at 140, 142, and 144 Cherry street, have had in the past five years as many as 22 cases of pulmonary tuberculosis in each house, as far as the records of the Board of Health go. It is probable that the actual number of cases of tuberculosis in each house is double this amount, as it is well-known that only one-half the cases are reported to the Board of Health." A public hearing will be given this and other plans of the Board on Nov. 13.

The Newer Bellevue a Certainty.—The Board of Aldermen last Tuesday passed the resolution endorsing the action of the Board of Estimate in condemning the block bounded by First avenue, Twenty-eighth and Twenty-ninth streets, for the extension and improvement of Bellevue Hospital. This resolution was passed by the Board of Estimate and Apportionment on the first of last July, and the action was then thought to be final. Dr. John Winter Brannan, President of the Board of Trustees of Bellevue and the allied hospitals, in looking over the city's charter, then discovered that the matter had to be approved by the Aldermen before it was legal. In the meantime the board had adjourned until late in August, and the meetings

since then have slipped by without any action on the part of the "city fathers." Dr. Brannan and the friends of the hospital began to fear that the measure was going to be held up and the long-planned reconstruction defeated. Bellevue's friends rallied again and went to work to make their canvass all over. A number of them were present today, and there was much congratulation when the resolution was finally adopted. While it was passed unanimously, the measure just squeezed through, since there was just a quorum present. This makes the enlargement and renovation of Bellevue practically certain. The new plot will make the new grounds larger by 75 per cent. than the old. Last Monday Dr. Brannan secured the approval of the Health Board of Engineers for the plan to extend the pier bulkhead out into the East River 200 feet, making the northern boundary of the new Bellevue plot from First avenue to the river 715 feet, and the eastern river front 710 feet. The approval of the War Department is practically assured. That leaves the closing of Twenty-eighth street from First avenue to the river the only thing to be done before the actual work of clearing away the property, preparatory to building, begins.

The Sale of Narcotic Drugs.—*The Druggist's Circular,* in commenting on this subject, writes: "The Committee on the Acquirement of Drug Habits of the American Pharmaceutical Association in its recent report at the Mackinac meeting sums up its conclusions in the following startling words: 'It may seem pessimistic, but the facts certainly seem to bear out the assertion that the only remedy for the present widespread increase in the use of narcotic drugs is in the enactment of stringent laws to throw as many difficulties as possible around the obtaining of such drugs for *any* purpose, the provision of exceedingly severe penalties for the sale of narcotic drugs for any purpose but medicinal, and for advice, practice or teaching that will cause non-users to become habitués and rigid enforcement of every penalty to its full extent.' The increase in the use of harmful drugs in this country is a most pitiful manifestation of human weakness and human folly.

"That something should be done to check the wreckage of the lives of promising men and women by habits so pernicious is evident to the most indifferent. How to legislate so as to put an end to such an evil is a problem that will require cool, careful consideration on the part of those who seek proper reform. If we level our attempts at legislation exclusively at the seller, nothing short of absolute prohibition is likely to be effective. If we can create a moral tone that will make the man who sells for anything other than legitimate use ashamed of his act, the man who buys to gratify a desire equally ashamed of his conduct, and the man who tempts others unwittingly to use it more ashamed than any of the rest, we will accomplish a good work. The tempter is the prime criminal of the lot and against him should legislation be especially aimed. The public buy immense quantities of proprietary medicines which, unknown to them contain narcotics, under the delusive notion that they will cure them of some ill. They have no idea that there is the slightest danger attached to their use. They actually do find in them some degree of comfort and a momentary support to their strained nerves. This accentuates their delusive hopes and keeps them using these drugs until they become moral and physical wrecks. The guilty advertiser who thus deludes them deserves no mercy. He is more dangerous than a wild beast. He—of all others—should be held up to the execration of an indignant public and his traffic be prohibited. The druggist who teaches that such preparations contain narcotics in order to get the money the victims are spending upon the advertised secret are but little, if any, better than the patent medicine advertiser who first led them to their destruction with his preparations. Any druggist who will cater for the trade of such sufferers because there is money in it should be made to feel that just indignation which such vicious conduct arouses in the hearts of the noble minded. Such druggists as cater to the depraved deserve to be restrained and punished for such conduct. How to restrain and punish these without restraining and punishing those who supply drugs for proper purposes only is the difficult problem we are called upon to solve. Narcotics have their uses as well as abuses. Can they be confined to the former and kept from the latter or must they be prohibited entirely? Some way should be provided by which intelligent persons could secure supplies of these articles for proper use while restraining the vicious and ignorant from misusing them."

An Unwise Move.—The Department of Health of this city, through its president, in a communication to Mayor Low, says: "It is our intention to recommend the distribution hereafter of department laboratory products gratuitously to all persons in this city. The laboratories will hereafter be maintained strictly from the public funds, and consequently every citizen is entitled to share equally in the benefits of these laboratories whether he be rich or poor." In still another communication to *The Druggist's Circular,* from which we quote liberally, he says: "I suggest also a further radical change. That is that the department of health shall hereafter dispense all its laboratory products free, as do other municipal and state laboratories (upon proper requisition by department officers or private physicians) to all residents of this city who may from time to time have need of certain of these products as a cure or preventive of contagious disease."

These two excerpts from President Lederle's communications leave no doubt as regards his future intent if he can secure sufficient funds from the board of estimate and apportionment. He intends to give away property belonging to the City of New York to individuals who ask for it notwithstanding the fact that Article VIII, Paragraph 11, of the State Constitution provides that no county, city, town or village shall hereafter give any money or property, or loan its money or credit to or in aid of any individual, association or corporation. The constitution further provides that "This section shall not prevent such county, city, town or village from making such provision for the aid or support of its *poor* as may be authorized by law." The Health Commissioner has no right to do as he proposes, neither can he get that right by any departmental, municipal or State enactment of law. Any such law would be unconstitutional if passed. Mayor Low cannot lawfully authorize such action on the part of Dr. Lederle. It would be manifestly illegal for the board of estimate and apportionment to make any appropriation for any such purpose as that asked for by the president of the department of health. Its duty is to supply only such funds as may be required by the department in the performance of its customary functions and for the care of the poor. In conformity with the provision of the

constitution already cited, the charter of this city declares that: "Said board of health may take measures, and supply agents and offer inducements and facilities for general and gratuitous vaccination, disinfection, and for the use of diphtheria antitoxin, and other antitoxins, and may afford relief to and among the *poor* of said city as in its opinion the protection of the public health may require." According to this they must even limit the supply to the poor of the city to such amount as will protect the public health. There is no provision for the indiscriminate giving away of the city's antitoxin to whoever sees fit to ask for it. The department of health is presumed to be composed of intelligent, honest officials and health experts. Their judgment is asked by the charter to come in and save the city from any extravagant bestowal of antitoxin even upon the poor. Where they give it to the poor it must in their judgment be a gift made necessary by some danger to public health. The protection of the public health is the motive to guide in the bestowal upon the poor and any that is bestowed upon them in excess of what is necessary to supply such protection is in violation of the charter of the city. Had the charter given the health commissioner the right to supply this article indiscriminately to everybody it would still have been illegal inasmuch as it could grant no right which the State constitution forbids. Section 1226 of the charter empowers the department of health to sell its surplus product of antitoxin but does not empower it to go into the wholesale manufacture of this article in competition with taxpayers to their injury. The uncertainty of the amount that would be required added to the uncertainty in the amount that could at any given time be produced from the animals in control of the bacteriologists of the city made it necessary for an excess to be produced in meeting the requirements of the poor. The charter provided for the disposal of this excess but the officers of the department construed the law to mean that they could make as much as they pleased and go into open market and sell it in competition with citizens. The Commissioner has acknowledged that this was contrary to the spirit of the charter and has discontinued the sale of the products of his laboratories outside of the city. Why should he seek funds to enable his department to enlarge its charitable operations—to extend them to the rich as well as the poor? Such extension is neither needful nor lawful.

Child Labor Laws Took Effect Oct. 1.—Three child labor laws of far-reaching importance went into operation Oct. 1. They are the Hill-Finch measures, prepared by the Child Labor Committee, and passed last winter by the legislature, in response to the appeal of settlements, churches, medical societies, and philanthropic organizations throughout the state. A very large share in the enforcement of the new laws devolves upon the Health Department of this city. All employment certificates are issued to children by this department, and the most important changes in the laws relate to the conditions under which these are granted. Dr. Ernst J. Lederle, Commissioner of Health, explained the new features as follows: "The new laws do not affect the age at which children may begin to work. They merely require parents to supply some real evidence that the child has reached the required age, fourteen years. A copy either of a birth or baptismal certificate or of some other religious record or of a passport must be filed when application is made. Hitherto the parent's word under oath has been accepted regarding the child's age, and the result has been merely to put a premium on perjury. This more rigid system is successfully used in Massachusetts and Connecticut, and will undoubtedly serve its purpose here equally well. Another important change in the law is its extension to cover telegraph, messenger and delivery boys, together with all children employed in business offices, restaurants, hotels and apartment houses. The law has applied hitherto only to factories and stores, and thousands of children in these other employments have been allowed to begin work with no questions asked by the authorities as to their age or schooling. This has been especially unfortunate in the case of telegraph and messenger boys, whose occupation subjects them to the most serious moral temptations. The proprietors of these establishments must now require certificates of all children they employ under the age of sixteen, and they must see to it that such children do not work longer than nine hours a day. Regular inspection of stores is now made by the sanitary inspectors of this department, and we shall at once send our men into the various other establishments which have now been brought under the law. But in order to do this work efficiently additional inspectors are needed, and I have therefore asked for an appropriation for 1904 sufficient to allow the appointment of ten 'mercantile inspectors' who will give their entire time to this work. We hope that, with the intelligent cooperation of the public, this law may accomplish the humane end for which it was designed."

According to the Secretary of the Child Labor Committee, Fred S. Hall, New York has now the best laws on this subject in the United States. "A few other States," he explained, "have single features in their laws which are better, the Illinois eight-hour limitation to children's work, for example, or the Massachusetts administrative system, by which children received their 'working papers' from the school authorities in each locality. But, taken as a whole, the law in neither of these States is as near the ideal as the New York law. We are constantly receiving inquiries from organizations in other States where attempts are being made to improve their laws, as well as numerous letters from prominent citizens of our own State, congratulating our Committee upon what has been accomplished. I have letters of this character from Commissioner de Forest, from Jacob A. Riis, and only a few days ago I received the following letter from President Roosevelt:

"Oyster Bay, N. Y., September 15, 1903.

Mr. Fred S. Hall,
Secretary, Child Labor Committee,
170 Fifth Avenue, New York, N. Y.

My dear Mr. Hall: I heartily congratulate you upon the fact that we now have, in New York State, child labor laws which, I believe, can be enforced. It is of the utmost importance that these laws shall not be left idle on the statute books. Your committee has been instrumental in securing their passage, and I wish you Godspeed in your efforts to complete the great service you have thereby rendered the community.

Sincerely yours,
(Signed) THEODORE ROOSEVELT."

John Williams, State Factory Inspector, was seen in Albany last week, and was questioned regarding the duties of the Department of Labor in enforcing the new laws. He stated that the changes made last winter remedy defects to which his department had frequently called attention in its reports. "Most of these changes relate to the conditions upon which employment certificates are issued to children by

the local boards of health. About 20,000 children in the State, fourteen or fifteen years of age, receive these certificates each year, but it is expected that this number will now be considerably reduced. Thirty thousand posters have been printed giving the revised law in full, and our inspectors will see that these are placed in every factory in the State. Inspectors will also call the attention of all proprietors to the new clause which allows children fourteen and fifteen years of age to be employed only nine hours a day. Nearly all factories where children are employed operate more than this each day, and it will, therefore, be necessary to adjust work in these establishments so that the children may come later or be dismissed earlier or be given a longer noon recess. The law is a humane one when you consider that children are not accustomed to the long hours which regular factory work involves. Their school life keeps them indoors but five hours a day, and to exchange this suddenly for ten hours in a factory, with overtime at intervals, places on them a strain which they cannot bear without injury. I regard the flat prohibition of overtime as the most important change which comes within our province to enforce. In all of this, however, the department needs the hearty cooperation of the community. Our 37 inspectors can not begin to cover the State with sufficient thoroughness to discover all violations, especially those relating to hours of work, and we therefore welcome information from individuals who know of cases where the law is not observed. It would be well for the manufacturers of the State to understand that it is our intention to enforce the amended law vigorously. If, after due notice, they disregard its provisions, we shall not be satisfied with the dismissal of the children illegally employed, but shall instruct our inspectors to prosecute all violations. This department is frequently blamed for not enforcing the child labor law in department stores, but inspection of these establishments is outside of our province. It belongs to the health authorities in each city, who are authorized both to make inspections and to prosecute all persons found violating the law. The firm of Humbert & Andrews, 646 Dean street, Brooklyn, was prosecuted last week by one of our deputies, and fined $140 for employing seven children under the legal age—fourteen years; and other cases of the same character are awaiting trial there."

Large Increase at Cornell.—The Cornell University Medical College on September 30 opened with a largely increased third and fourth year class, but without any marked increase in the numbers of the first year, owing to the rigid enforcement of entrance requirements. It is interesting to note the improvement in the personnel produced in the entering class by practically requiring the entrance subjects necessary for admission to the Academic Department of the University.

PHILADELPHIA.

Samaritan Hospital.—The completed north wing of the new building for this hospital was dedicated October 3. The wing is devoted principally to private rooms and a children's ward.

A New Phase in the Adulterated Food Question.—An important move in the crusade against the sale of adulterated foods has been begun in Common Pleas Court by Mrs. Pennypacker, a retail grocer, against a prominent lard manufacturer. The suit is brought to recover $5,000 damages for injury to her business reputation. The action is a sequel to the arrest of Mrs. Pennypacker on the charge of selling adulterated lard. The lard had been bought from the defendant upon the representation that it was pure.

Widener Memorial Home for Crippled Children.—The exterior of this building on York road is practically finished and work on the interior is being rapidly pushed. The building is expected to be ready for occupancy in one year from the present time.

Decrease in Typhoid Fever and Smallpox.—For the week ending October 3 the new cases of typhoid fever were 76 and smallpox 2, a decrease respectively of 5 and 16 cases from the previous week. But 19 cases of smallpox are now under treatment in the Municipal Hospital.

State Hospital for the Insane.—At the October meeting of the trustees of the State Hospital for the Insane at Norristown, it was reported that two habitual drunkards had been admitted, under the provision of an act of the last legislature, for treatment in the institution. The cost per capita of the 2,138 patients in the hospital the past year was 3.52, or twenty-five cents greater than last year. The expenses of the institution were $391,000, an increase of over $16,000. Steward West's department shows a profit of nearly $13,000. The executive committee was directed to inquire into the feasibility of employing female nurses for male patients, especially for the infirm. All the physicians and officers were re-elected.

Garbage in Two Cities.—The following is quoted from the Chicago *Inter-Ocean:* The Committee of the City Council which has been visiting the Eastern cities for the purpose of obtaining information regarding the methods employed by those communities for the collection and disposition of garbage has returned, and Alderman Rayner, one of its members, reports: "In Philadelphia there is a daily collection of garbage, even in the suburbs. The city pays $500,000 a year to the company which collects and disposes of the garbage. Last year Chicago spent $700,000 on garbage collection and removal and had to use dumps, much to the annoyance and disgust of the citizens." That is to say, poor misguided, misgoverned, machine-managed, corrupt Philadelphia spends $500,000 for the collection and disposition of its garbage, and collects and disposes of it, both in city and suburbs, while Chicago, under a "personally honest" Mayor, a "redeemed" City Council, and a generally "reformed" municipal government, spends $700,000 for the removal and disposition of garbage within the city proper, which is mostly left to accumulate and rot in its alleys.

Tubal Menstruation.—An instructive case of this comparatively rare condition was reported to the Philadelphia Obstetrical Society October 1 by Dr. P. B. Bland. The patient had begun to menstruate at the age of fourteen years and that function had always been normal. She was married at the age of twenty-one years and had never been pregnant. In April, 1902, she was operated on for an intrapelvic (probably a broad ligament) abscess. An enormous quantity of pus was evacuated and a gauze drain inserted. Healing progressed favorably, but just before the patient left the hospital a small sinus appeared at the lower extremity of the incision. This remained open for ten months, discharging practically nothing until the day preceding each menstrual period, when a colored fluid would appear, this finally becoming bloody and presenting all the characteristics of menstrual fluid. With the

cessation of menstruation the sinus would remain quiescent until the succeeding period. Operation showed that the fimbriated extremity of the right Fallopian tube was adherent to the abdominal scar. Microscopical examination of the removed tube revealed no change other than a low-grade inflammatory process. This case brings up the question of the relation of the Fallopian tubes to menstruation. Dr. Bland has been able to find but four authentic cases similar to his own but from a study of the five he reaches the conclusion that the tubal mucous membrane seems to be an active participant in the physiological process of menstruation. From this it follows that the part played by the tubal mucous membrane in the etiology of tubal gestation must be given due consideration. The case reported also emphasizes the point that factors other than neglected foreign bodies or an infected ligature must be considered in the etiology of postoperative abdominal fistulæ.

CHICAGO.

Opening Exercises of Chicago College of Physicians and Surgeons.—The Chicago College of Physicians and Surgeons held its opening exercises a day or two ago, with an enrolment of 800 medical students. The principal address was made by Dr. George P. Dreyer, who selected for his subject, "The Scope and Purpose of Modern Medical Education." The dean, Dr. Wm. E. Quine, and the Rev. Henry Irving Rasmus also spoke. A reception was given to the students.

Commencement Exercises of Illinois Medical College.—Forty-two students of the Illinois Medical College assembled at Handel Hall September 30, to receive their diplomas and listen to addresses by members of the faculty. Secretary W. C. Sanford read the annual report. There are at present enrolled as students of the college, 300 pupils, which is more than have ever attended the institution before. Professor B. Brindley Eads, dean of the faculty, made the announcement of the graduating class, after which the degrees were conferred by President, Heman H. Brown, M.D. The doctorate address was made by ex-Judge Edmund W. Burke, and Bishop Fallows pronounced the benediction. Nearly 200 guests of the faculty assembled in the banquet hall at the Auditorium Hotel in the evening at a banquet provided for the young physicians. Toastmaster Seth Scott Bishop presided and introduced the speakers.

Want Health Laws Codified.—Conflicting ordinances pertaining to the prevention of the spread of contagious diseases are to be sent to the city council to be codified so that the health department will be less hampered in its efforts to check communicable diseases. This was determined upon at the midweek conference of the heads of divisions and bureaus of the health department. Steps are to be taken also to enforce compliance by physicians with the law requiring that births be properly reported. Since the new statute went into effect in July there has been a decrease in the reported number of births. The law provides that a fee of 25 cents shall be paid the physician, but no appropriation to cover this expense has yet been made.

Physicians' Club Takes Action on Dog License Law.—The passage of an adequate dog license ordinance as a hydrophobia safeguard will be urged on the city council by the Physicians' Club of Chicago. The club reached this decision, after listening to addresses by prominent doctors on "The Hydrophobia Question." It instructed its directors to call upon the Chicago Medical Society's council to arrange for bringing the subject before the aldermen. "It has been absolutely demonstrated in England," said Dr. Arthur Dean Bevan, "that a proper law relating to dogs will eradicate hydrophobia. There are people who think hydrophobia is a myth, but they are ignorant of the facts. We had 14 deaths from the disease last year and we probably shall have 20 deaths this year in the city. Rabies in dogs is just as prevalent in the spring, fall and winter as in summer. It is a mistake to make our dog laws apply only to the heated season of the year. From March 1 to Nov. 1, the present dog law is not in force. We can pass a law that, properly enforced, will stamp out hydrophobia in Chicago." "There have been epidemics of hydrophobia in Chicago," said Dr. A. Lagorio, director of the Chicago Pasteur Institute. "The South Side passed through one a year or two ago, and more recently the West Side has had such an epidemic. In the last four months I have treated over 100 cases from Wisconsin. Nearly all cases are due to strange and vagrant dogs—the well-treated, well-fed dog seldom develops rabies. It is a great mistake to kill the dog suspected immediately; it should be kept under surveillance for ten days at least. There are many substances that quickly destroy the virus, one of the most useful being lemon juice, which neutralizes it in three minutes." Dr. Ludwig Hektoen discussed the subject from the pathological standpoint, and Dr. A. H. Baker, treasurer of the Chicago Veterinary College, from the standpoint of a veterinarian. "We conclude that hardship, hunger, thirst and heat have nothing to do with developing the disease," said Dr. Baker. "It is communicated from one animal to another, and the virus must enter by a wound or artificial inoculation for experimental purposes." All the speakers agreed that such regulations as obtain in England, where it is said vagrant dogs are not allowed to exist, and dogs from foreign countries cannot be imported without quarantine, should be generally adopted. John G. Shortall, president of the Illinois Humane Society, indorsed this view. "It is proper that homeless dogs should not be allowed to exist," he said. "All dogs should be owned, and owners made responsible for them. Muzzling and keeping in leash dogs not on the premises of their owners, ought to be insisted on for the benefit of humanity. A net ought to be kept in every police station and used to capture the dog suspected of being mad. For a policeman to try to shoot such a dog immediately is not only foolish from a scientific point of view, but dangerous to the public." The meeting was presided over by Dr. William T. Belfield, and was attended by about fifty physicians. As special guests of the club there were present Dr. E. D. Martin, Dr. F. W. Parham and Dr. John Ochsner, all of New Orleans, and Dr. Norman Bridge, of Los Angeles, Cal.

American Academy of Railway Surgeons.—The tenth annual meeting of this body was held at the Great Northern Hotel, Chicago, October 1 and 2, 1903, under the Presidency of Dr. L. Sexton, of New Orleans, La. The Academy has about 140 members and is an energetic, scientific organization. Several interesting papers were read and freely discussed.

Conservatism in the Treatment of Crushing Injuries.—Dr. Jere L. Crook, of Jackson, Tenn., discussed this subject and reported three interesting cases, showing how aseptic and antiseptic technic have reversed conditions, substituting salvation for sacrifice, and limbs of living flesh and bone for those of wood, cork and leather.

Drs. R. Harvey Reed, Evan O'Neill Kane, A. H. Brumbaugh, H. M. Dean, F. A. Butler, and O. B. Quinn talked along the line of the conservation of limbs and of as much tissue as possible.

Injuries of the Large Joints.—Dr. I. V. Crosby, of Stuart, Iowa, discussed severe injuries of the large joints. He reported two cases to emphasize the neces-

sity of carrying out the strictest antiseptic precautions from start to finish. By so doing the function in many severely injured and infected joints could be saved even in the rural districts.

Fracture of the Humerus.—Dr. F. A. Butler, of Harvard, Neb., read a paper, in which he reported a case of fracture of the humerus followed by paralysis, but by persistent care, massage, electricity and constitutional treatment, followed up in detail by an intelligent patient, the paralysis of the forearm and hand was overcome and the arm restored to its natural condition and usefulness after having been paralyzed for about one and one-half years.

Dr. R. Harvey Reed, of Rock Springs, Wyoming, said that as a result of cicatricial contraction or of torn muscles which surrounded the nerve, a certain amount of paralysis would follow which could not be controlled until after absorption had taken place, as in the case reported by the essayist.

Physical Examination of Railroad Employes.—Dr. H. B. Jennings, of Council Bluffs, Iowa, said this was an important necessity if any railroad company was to have competent men in its employ. The surgeon making these examinations had a responsible duty to perform for the company. This paper elicited a lengthy discussion, during which different methods of examining railroad employes were brought out.

The Value of an Injury.—This was the title of the President's Address, delivered by Dr. L. Sexton, of New Orleans, La. He cited a number of cases that had passed muster in the courts of the country, in which verdicts for various elements of injury had been rendered, and the judgments entered thereon had been approved by the courts of last resort. The railway surgeon could not prevent injuries, but he could materially lessen the loss or damage incident thereto by careful, skilful and painstaking attention to each case submitted to his individual care.

Ocular and Aural Examination of Railroad Employes.—Dr. Frank Allport, of Chicago, made some remarks on this subject. He submitted a report and resolutions, which were referred to a committee for consideration. The committee subsequently reported in favor of the adoption of the rules and test submitted by Dr. Allport, with some minor amendments. Dr. A. H. Andrews, of Chicago, spoke of the value of the tuning fork as a hearing test.

Rheumatism in Connection with Minor Injuries of the Back.—Dr. A. Wilson, of Alva, Oklahoma, spoke of the occurrence of rheumatism in minor injuries of the back. The diagnosis between a severe injury to and a slight injury of the back accompanied with rheumatism might be attended with great difficulty. Temperature and results of palpation and exclusion would be the means of differentiation.

Traumatic Influence in the Production of Movable Kidney.—Dr. M. L. Harris, of Chicago, presented an exhaustive and interesting paper on this subject.

Head Injuries.—In a symposium on head injuries, papers were presented by Drs. C. H. Mayo, John E. Owens, Haldor Sneve, J. F. Pritchard, W. U. Cole, A. L. Wright, and Ira B. Bartle.

Diet in Its Relation to Surgical Cases.—Dr. A. B. Brumbaugh, of Huntington, Pa., discussed this subject. Among other things he said that a healthful diet in general, to aid and enable men and women to attain to their highest capacity mentally and physically, should be simply nutritious, and consist of such articles as were readily, quickly and perfectly digested. That it should be mainly of fruits, vegetables simply cooked, and the tallow-bearing meats. That all excesses and doubtful and harmful articles should be discarded, and that the diet in surgical cases should conform strictly to the simple type of healthy living.

A Knife with a Special Curve.—Dr. Evan O'Neill Kane, of Kane, Pa., exhibited this instrument. He said the knife was especially valuable in all work at great depth in a confined area, as in the disarticulation of the hip-joint, the ligation of deeply seated vessels, in appendectomies, and other abdominal work, particularly upon stout patients, when it was desired to make a small opening. Furthermore, it was valuable in vaginal hysterectomies, perineal lithotomies and in work upon the cervix uteri, etc.

Radical Cure of Hernia Among Railroad Employes.—Dr. E. Wyllys Andrews, of Chicago, read a paper on this subject. He said that no mortality except from the anesthetic and practically no relapses might be truthfully claimed for the radical cure work. The danger of the operation stood as a distinctly smaller one than that of the strangulation risks of a lifetime. He alluded to the different methods of operating for hernia, and then described his imbrication operation, saying that over a thousand cases had been operated by his method, a little more than half of this number in his own service. No deaths had occurred in his cases, and although the records were not accessible in all, a very small percentage of recurrences had taken place in the ones he had been able to trace.

The Secretary presented a lengthy letter from Dr. J. N. MacCormack, organizer, relative to the practicability of the Academy becoming affiliated with or a branch of the American Medical Association. The communication was referred to a committee. This committee subsequently reported that the time was not ripe for the adoption of the plan proposed, and, on motion, the action of the committee was concurred in by the Academy.

Officers.—President, Dr. Samuel C. Plummer, Chicago; Vice-Presidents, Dr. A. L. Wright, Carroll, Iowa, and Dr. W. U. Cole, Columbus, Ohio; Secretary-Treasurer, Dr. Thomas B. Lacey, Council Bluffs, Iowa; Assistant Secretary, Dr. H. B. Jennings, Council Bluffs, Iowa; Editor of the Academy, Dr. D. S. Fairchild, Des Moines, Iowa. Place of meeting, Chicago; time to be decided by the Executive Committee.

GENERAL.

More Fever at Laredo.—The yellow fever situation is becoming more and more aggravated if one may believe the reports from the Southwest that we are getting from day to day. That of Oct. 3 is as follows: New cases, 6; suspicious cases, 2; cases previously reported, 39; total cases to date, 45; total deaths, 3. There were two deaths from the fever at Nuevo Laredo. United States Vice-Consul J. F. Kimball is still ill with the fever. Alonzo B. Garrett, United States consul, has a case in his home—that of a friend who was stricken with the disease in a hotel.

The Ethics of Suicide.—The New York *Times* writes: "Few subjects have been more exhaustively and less profitably discussed than that which may be formulated in the question: Has any one the right to end his life by his own deliberate act when, for any reason, he has no further use for it? Probably its discussion began with civilization, and will continue while it endures. Probably also those for whom it has interest were nearer in agreement some thousand years ago than they are now. Modern differences of opinion are seemingly irreconcilable. Some hold that the right of self-destruction is inalienable, to be availed of whenever one pleases —so far, at least, as his human fellow-beings are concerned. Others regard suicide as an unpardonable sin, to be punished by temporary penalties in

this world if unsuccessfully attempted, and eternally in the next if successfully consummated. Many are of the opinion that self-destruction is an act of which a sane human being is incapable, and hold that those who have recourse to it, whatever the provocation, are at the time irresponsible. The average opinion would seem to be that under no conditions has one the right to anticipate the inevitable, even by an hour, and that to do so is to display the lowest order of moral cowardice. This view of the matter is quite inconsistent with the general view of death as the supreme calamity, to be avoided and postponed by every means available; but many popular convictions are inconsistent with other popular convictions, if, indeed, those may be called convictions which are merely acquired habits of thought resulting from mistaken concepts imparted by early education. An instance to set one thinking along the non-convergent lines of this interminable and inconclusive discussion is that of the relatively elderly and relatively wealthy Connecticut man, a prominent citizen of Winsted, who committed suicide a few days ago. He was seventy-one years old, and under the most favorable conditions was very near the end of his useful life, if indeed, he had not already reached it. He was a sufferer from chronic rheumatism, and looked forward to months of acute suffering as Winter drew near. Doubtless he had ceased to consider life worth living at the cost of the pangs he knew were in store for him. It is not impossible that he had some consideration for those who would have had to sacrifice the comfort and pleasure of life to nurse him. However this may be, he determined to part with the little remnant of his life while still able to help himself. With conscientious care he went over his accounts, settled with his creditors in full, and put his affairs in order. Those dependent upon him were provided for as well as they ever would be through his efforts. Then he borrowed a revolver from his friend, the President of a local bank, and, going where his act would least annoy others, shot himself in the head. It is difficult to imagine a case giving room for a wider diversity of honest opinion as to the ethical and moral aspects of suicide. A great deal, of course, depends upon the point of view. Those for whom the subject has interest may think it out for themselves, each in his own way."

New Journal of Social Medicine.—The *Monatsschrift für soziale Medizin* is the title of a new monthly journal, to be devoted to social topics in their medical relationships. It is to be published by Gustav Fischer, of Jena, at 10 marks per year.

Obituary.—Dr. Charles Blackwell Sweeting, of Key West, Fla., died last Sunday of heart failure at the home of his niece, Mrs. G. Wischer, of No. 9 Eighth avenue, Brooklyn. Dr. Sweeting was a native of Harbor Island, in the Bahamas. He was a member of the Florida Medical Society and the Florida Board of Medical Examiners.

Dr. William Dandison Wood, probably the oldest physician on Long Island, died at his home, in Fulton street, Jamaica, last Sunday night, aged eighty-two years. He was born in Lincolnshire, England, and studied medicine in England three years, when he went to Vermont and later was graduated from the Castleton Medical College, in 1855, when he went to Jamaica and began practising medicine. He was one of the organizers of the Queens County Medical Association and has served one term as Coroner of Queens county.

Dr. William Johnson Dale, who for twenty-one years served as Surgeon-General of Massachusetts after his appointment in 1860 by Gov. Andrews, died at his home in North Andover, Mass., last Wednesday.

Dr. John B. Johnson, aged eighty-six, for over sixty years one of the prominent physicians of St. Louis, is dead in that city. He was born at Fairhaven, Mass. Dr. Johnson was the First Vice-President of the National Medical Association.

Dr. Cornelius Sheperd died in Trenton, N. J., last Wednesday. He was born in Bucks County, Penn., in 1837, and was a graduate of the University of Pennsylvania.

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Fifty-third Annual Meeting, held at York, September 22, 23 and 24, 1903.

(Continued from Page 668.)

THIRD DAY—SEPTEMBER 24.

Three Unusual Vesical Cases with Operation.—Dr. Ella B. Everitt, of Philadelphia, reported two cases of calculus and one of extensive laceration of the perineum involving the bladder. The first case of calculus occurred in a girl aged thirteen years, who, three years previous, while picking about the vulva with a hairpin had allowed that object to disappear within the urethra. The girl was afraid to speak of the incident and did not do so until pain became intense. The calculus, which was the size of a walnut, was removed through a suprapubic incision. The hairpin served as a nucleus of the calculus, one fork being imbedded in the bladder wall. Two operations were necessary in the second case to close the bladder and repair the perineum. The third case was interesting because of the known length of time in calculus formation and the condition of the urine during that period. The patient was a woman aged sixty-eight years, on whom a cystoscopic examination was made. A small piece of absorbent cotton, lost within the bladder at that time, became the nucleus of the stone. Three months after the introduction of the cotton the calculus was removed through the vesico-vaginal septum. The incrustation was from 2 to 3 mm. in thickness, being phosphatic in nature. During the last third of the three months the urine had been practically normal, as shown by repeated examinations.

Penetrating Wounds of the Orbit.—Dr. A. R. Craig, of Columbia, presented patients and read histories of 5 cases of penetrating wounds of the orbit. Two were gunshot wounds and the missiles were not extracted, no infection following. From these he concludes that when a particle penetrating the eye is sterile and is neither steel nor iron, its disposal had better be left to nature. The other 3 cases were wounds by fragments of steel, all of which were located by the X-ray and withdrawn by a magnet. This treatment should be adopted in all such cases.

Sarcoma of the Maxillary Antrum and Orbit.—Dr. J. F. Klinedinst, of York, reported this case. The patient was a boy of fourteen years and the growth was at first supposed to be a cyst. Operation revealed its true nature. Recurrence took place in two weeks. The antrum and orbit were then completely removed and at the end of seven months there has been no recurrence.

Statistics of Refraction Work.—Dr. M. V. Ball, of Warren, presented tables of 1,135 cases of refraction, as met with in private practice. He stated that no unusual facts were elicited, the findings in the main sustaining those reported by others.

Treatment of Suppurating Ulcers of the Cornea.—Dr. L. H. Taylor, of Wilkesbarre, spoke of the importance of prophylaxis in the question of ulcers. All wounds of the cornea should receive prompt attention. If the ulcer be small it may be treated by any of several methods, but if it is large or has a tendency to become especially virulent there is one remedy above all others in value, and this is the galvanocautery.

Affections of the Eye Associated with Disease of the Contiguous Sinuses.—Dr. S. D. Risley, of Philadelphia, spoke of the existence of persistent asthenopia in connection with disease of the sinuses to which it should direct attention. A focus of purulent inflammation at the root of a molar tooth was in one case the starting point of a troublesome affection.

The Operative Treatment of Squint.—Dr. Wendell Reber, of Philadelphia, considered at length the indications for tenotomy and advancement of the recti muscles and the technic of the operations. If upward or downward deviation is present it should receive surgical attention one or two weeks before the lateral muscles are corrected.

The Differential Diagnosis of Exophthalmos.—Dr. J. E. Willetts, of Pittsburg, spoke of the various lesions producing exophthalmos and the points of difference between them. Basedow's disease is one of the most common and easy of recognition. Aneurism of the orbit is a more uncommon affection, but careful study will usually reveal its true nature. The differentiation of meningocele from dermoid cysts will present more difficulty.

Danger Signals of Intracranial Infection from the Pneumatic Cavities of the Ear and Nose.—Dr. B. Alexander Randall, of Philadelphia, said that not enough careful investigation of the upper air passages and their accessory sinuses, especially the nasal sinuses, has been done. The most usual early signs of intracranial extension of disease of these sinuses are what are known as signs of irritation. When these develop the sinuses should at once be inspected for evidence of disease. A recent discharge from the nose or ear furnishes a clue. Continued fever in these cases is misleading, as it often leads to the diagnosis of typhoid fever and the real source of trouble is frequently overlooked.

The Use of Myelocene in Catarrhal Deafness.—Dr. W. B. Weidler, of Lancaster, reported 5 cases. Three showed decided improvement. The 2 that were unimproved had had a duration of fifteen to twenty years.

The Upper Respiratory Tract.—Dr. J. C. McAllister, of Ridgeway, reviewed the functions of this region and spoke of the more common affections with points regarding treatment.

The Syphilitic Nose and Throat.—Dr. Chas. P. Grayson, of Philadelphia, discussed the various stages of this disease, their diagnosis and treatment. The characteristic odor of the later stages is a prominent feature in the diagnosis. Success with this stage is possible only with immediate recognition and energetic treatment.

Family Periodic Paralysis.—Dr. G. E. Holtzapple, of York, gave a very graphic description of this affection which was made possible by his unusual opportunity for its study. He has observed the disease in a family of which four generations have been affected. The cases number 16 and of those 6 have died during an attack of the paralysis, although the condition has been claimed to be non-fatal. Eighteen members of this family have been subject to sick headache and 30 members to either paralysis, sick headache or both. Some members of the family have been affected only with sick headache, while their children have been subject to attacks of paralysis. There is no syphilitic history in the entire family. The clinical history of a number of the cases was given in detail. Three sons of one woman who was subject to sick headache weekly had attacks of both sick headache and paralysis and all died during attacks of the latter. The clinical picture is much the same in all cases. The attacks occur at frequent intervals during some periods and last from some hours to a few days. A striking feature is the rapid and complete recovery from utter helplessness which marks the termination of an attack. A patient who cannot move his head or even a finger will in a few hours be as strong as ever he was and perfectly able to go about his work, even though that be of the hardest kind. No after-effects remain unless there be a slight soreness of some of the muscles. Unfortunately no post mortem has been obtainable on the fatal cases and the pathology of the disease is obscure. Holtzapple believes it to be a vasomotor neurosis. The treatment affording the most relief is a combination of large doses of the bromides with caffeine. This gives unmistakable relief and has a decided abortive influence, no severe attack occurring when it is taken during the onset.

Dr. C. G. Hildebrand, of York, in the discussion, who is one of the three physicians who have lived among this family, referred particularly to the headache. It is more common in the females of the family and is unaffected by the menopause, this being contrary to the history of ordinary sick headache. The bromides are as efficacious in relieving the attacks of headache as they are the attacks of paralysis. Those subject to either the paralysis or headache usually keep on hand a supply of the bromide and caffeine mixture which they take as soon as symptoms occur.

A Case of Cerebral Thrombosis with Skiagraph Showing the Area of Softening.—Dr. C. W. Burr and Dr. G. E. Pfahler, of Philadelphia, reported this case for the purpose of showing what use can be made of skiagraphs in organic diseases of the brain. The skiagraph was made after the death of the patient and showed very distinctly the diseased area. The lesion had been of thirty years' duration. It has been well shown that new growths in the brain can be located by the X-ray and Dr. Burr believes that with increase in skill and in accuracy of machines, skiagraphic pictures of organic brain lesions will in the future be of diagnostic value. Of the greatest practical worth will they be in cases of hemiplegia in Bright's disease, if it can be shown whether the paralysis is due to hemorrhage or thrombosis in the brain or is simply uremic in nature. Failures to differentiate these cases are among the most frequent mistakes made by neurologists.

Ocular Phenomena and Certain of the Reflexes. A Study Based upon the Examination of a Hundred Normal Men.—Dr. Theodore Diller, of Pittsburg, conducted this examination upon 103 male students ranging between eighteen and thirty-three years of age. The eye grounds, convergence, accommodation, the iris, pharyngeal and conjunctival reflexes, the Achilles and knee-jerks were some of the conditions tested. The knee-jerks were difficult to elicit in one-fifth of the cases. Diller says that the Achilles jerk should be tested with the knee-jerks in every case as it is more constant than the latter. It is strange that it should be so much neglected. The great variations in the irides were of interest. Eye grounds were examined with special reference to gray atrophy. This condition was not found, but in 13 there was some cupping and a slight gray stippling at the bottom. The ocular phenomena varied greatly. The inference reached was that one should be very cautious in drawing conclusions

from these phenomena in patients unless they are accompanied by confirmative symptoms.

The Differential Diagnosis Between Friedreich's Disease and Insular Sclerosis.—Dr. F. Savary Pearce, of Philadelphia, gave a number of points that will be of service in differentiating these diseases. This is a matter of scientific importance, though it is probable that early diagnoses would result in no great optimism so far as treatment is concerned. Friedreich's disease is suggested if there is alcoholism or a degenerative tendency in the history and there are no remissions. In insular sclerosis remissions are common, there are intention tremors, the gait is not cerebellar. In Friedreich's disease the excursions are longer than in intention tremor and it is evolutionary in type. Insular sclerosis is more a failure of nutrition.

Acute Inflammation of the Middle Ear in Diseases of Children.—Dr. T. J. Elterich, of Allegheny, spoke most trivial disease of childhood. Lesions not closely associated with the ear are exceedingly liable to have otitis as a complication. Among such lesions are gas-that it should be looked for in connection with the of the frequency of otitis mēdia in infancy and said tro-enteritis, apical pneumonia, and influenza.

The Result of One Year's Medical Treatment of Gastroptosis.—Drs. A. P. Francine and J. D. Steele, of Philadelphia, reported their results from the treatment of this condition. They have endeavored to determine three questions: (1) The proportion of cases in which gastroptosis and stomach symptoms are both present that the symptoms are due to the displacement; (2) the effect of mechanical treatment; (3) the prognosis. Twenty-eight cases have been observed one year or longer. In 16 there was diminution of HCl, in 2 there was dilatation of the stomach. None had chronic gastritis. The dominating condition seemed to be gastric neurasthenia. Sixteen cases improved greatly under mechanical support and diet. It is believed that the downward displacement may of itself be responsible for gastric symptoms. About one-fifth of the cases belong to this class. The remainder are due to gastric motor insufficiency, neurasthenia, constipation, congestion, etc. The prognosis is favorable in the first class of cases.

Dr. Theodore Diller, of Pittsburg, in the discussion cited two cases of neurasthenia that were greatly benefited by treatment of the stomach condition or gastroptosis. Dr. S. Solis Cohen took exception to the statements that made neurasthenia a result of gastroptosis or movable kidney. Neurasthenia is a distinct disease and is not cured by operations on the stomach, etc. The best that can be hoped from a bandage in gastroptosis is to give relief and yet this may make the patient averse to operation. In marked degrees of prolapse operation is necessary for good correction. Dr. Ernest Laplace said that malnutrition caused sagging of the viscera and the entire condition was put under the name of neurasthenia. The important point is not what to call the condition, but that patients come for relief. Medical measures and support alone do not answer. Surgery is able to remove the cause of exacerbation and allow medicines to act. Dr. Steele said that gastroptosis was a complication rather than a symptom of neurasthenia. Mechanical support seems to be an absolute necessity for treatment. Cure is effected only by removing all the links in the cause. He is not prepared to say that surgery is not needed, but a certain proportion get well without it.

Edebohls' Operation of Decapsulation of the Kidney for the Cure of Chronic Bright's Disease.—Dr. James Tyson, of Philadelphia, devoted some time to the history of this operation, which he says is rightfully credited to Edebohls, though it was foreshadowed by Reginald Harrison. Tyson believes that the operation prolongs life in many cases and that it has come to stay. He cited the case of the girl of ten years which he reported at the last meeting of the Association of American Physicians. She is now the picture of health, though there is still considerable albumin and a few hyalin casts in the urine. It is too early to place the effect of this operation on any one cause. The chief obstacle to repair in parenchymatous nephritis is anemia or a vascularity of the parts. In the interstitial variety the vessels are compressed and partly destroyed. Stripping the capsule removes the obstruction and the power of repair returns. Whatever the explanation, the operation is a serviceable one if judiciously applied. It is not to be done until medical treatment has had a thorough trial. The parenchymatous variety is more promising than the interstitial. Results are not so satisfactory in cases having extensive cardiovascular lesions. Operation is advisable in cases of persistent idiopathic hematuria. It is astonishing how much manipulation the kidney will stand. The surgeon should be familiar with renal surgery.

Dr. S. Solis Cohen, in discussing this paper, reported the case of a woman who had a floating kidney that was much enlarged and hard. The urine contained albumin and casts and there was persistent hematuria. The kidney was anchored, the capsule simply being incised. Immediate improvement followed. The albumin and casts disappeared, though hematuria still occasionally appears. The woman has gained 40 pounds. The outcome of this case points to the fact that operation does much to relieve chronic inflammation of the kidney. Dr. Ramon Guiteras, of New York, said it was a question if the new capsule that was formed would not produce the same or even more marked effect than the original. After a period of freedom there will probably follow a period of contraction and the patient will die. Chronic Bright's disease may be improved by nephropexy, as there will not be formed a second thick capsule.

Some of the More Unusual Results of Movable Kidney.—Dr. C. P. Noble, of Philadelphia, said that local symptoms in movable kidney are generally considered to be rare, but he has noted a number of illustrations. The two most common are a sense of dragging in the region of the kidney and the presence of a movable tumor that can be appreciated by the patient. Though the usual symptoms are general, it is well to bear in mind that local ones are at times present. He has yet to see a case in which he thought Bright's disease was due to movable kidney, still it is well to keep in touch with the condition of such organs by frequent examination of the urine.

Surgical Treatment of Facial Palsy.—Dr. Chas. H. Frazier, of Philadelphia, reported a case of anastomosis of the facial and hypoglossal nerves in a young man who had the former severed by a pistol ball. The chances of success are better in these cases if the operation is done early. The condition of the muscles rather than of the nerve is of prognostic value in old cases. The technic of neural anastomosis and the effects of using the hypoglossal and the spinal accessory were discussed.

The Treatment of Puerperal Sepsis.—Dr. E. E. Montgomery, of Philadelphia, said he chose the subject which he thought would be of greatest interest to the general practitioner. A serious error, often made, is that of attributing high temperature to some cause other than sepsis. True sepsis is more insidious than infection from retained membranes. Curetting is of no avail in the former cases when the uterus is smooth and the infection is in the blood. The value of antistreptococcus serum is doubtful. Hysterectomy is of no

avail when neighboring venous trunks are infected. As to germicides by intravenous injection he has used both formalin and corrosive sublimate, the former not stronger than 1 in 5,000, but it is doubtful if either is more efficacious than salt solution. No treatment can be applied to every case, but general rules can be followed. Cleanliness should be observed and vaginal or intrauterine douches given. Active purgation should not be employed. When there is peritoneal inflammation, vaginal section and drainage is indicated. Hysterectomy should be done when there is pus in the uterus. A pus tube or ovary should be removed, but no other part not containing pus.

Dr. D. J. Bergey, of Philadelphia, in the discussion, said that in the use of antistreptococcus serum it should be determined that streptococci are present and then use the serum until they disappear. The serum manufactured previous to one year ago was of but little use. That which is prepared now is of more value.

One Year's Work in Appendicitis.—Dr. John B. Deaver, of Philadelphia, reported his operations for appendicitis for the year ending September 1, 1903. In all there were 566 operations, divided as follows: (1) General peritonitis, 16 cases, 5 deaths, mortality 31 per cent.; (2) localized abscess, 183 cases, 22 deaths, mortality 12 per cent.; (3) disease confined to the appendix, 367 cases, 3 deaths, mortality 8 per cent. The mortality was in direct proportion to the amount of surrounding tissue involved and hence depended upon the duration of the disease. To trust to peritoneal absorption in peritonitis can be compared only to faith cure.

The Difference Between the Management of the Appendicitis and Salpingitis.—Dr. Geo. Erety Shoemaker, of Philadelphia, called attention to important differences in the prognosis and treatment of these two conditions, though they lie close together, present at times similar symptoms, and may be coincidently present. Appendicitis is apt to be associated with gastro-intestinal disturbance while in salpingitis there is apt to be menstrual symptoms and a mass lower in the pelvis. Appendicitis is much more treacherous. Gangrene in the tube is rare, and pus may be awaited. All cases of appendicitis with the exception of simple catarrhal should be operated on. The above exception should follow the rule unless symptoms abate within twenty-four hours.

The Management of the Pus-appendix.—Dr. G. W. Guthrie, of Wilkes-Barre, gave his technic for operating upon these cases and reported two years' work. In the Wilkes-Barre hospital during 1901 there were 51 cases of appendicitis operated upon. Of this number 25 were pus cases and 2 died, making a mortality of 8 per cent. In 1902 the cases were 71, with 36 pus cases, and 3 deaths, a mortality of 8 1-3 per cent. In operating an incision avoiding the pus cavity is made. The cavity is then walled off with gauze, opened carefully, and the pus removed by wiping. A counter-opening into the pus cavity is then made and drainage tubes inserted.

Value of the Differential and Absolute Leucocyte Count in Cases Simulating Appendicitis.—Dr. A. Barr Snively gave a résumé of current literature on this subject.

Suppurative Appendicitis.—Dr. Ernest Laplace, of Philadelphia, said that the most important point in considering appendicitis was the change in virulence of the germs. What has been a mild case may in a few hours develop great virulence. The cardinal feature in treatment is irrigation which is kept upon the table while the patient is partially coming out of ether.

Dr. Deaver, in discussing these papers, said that a fact to be remembered is that intraperitoneal abscesses are often accompanied by other collections of pus. In one case of pelvic abscess, the lesser peritoneum was found to contain pus. He does not put a stitch in pus cases, the entire wound being left open for drainage. Dr. Shoemaker said he did not get much good from a leucocyte count, though he has it made in all cases. Dr. Laplace again emphasized the importance of irrigation. He makes in bad cases two openings posteriorly in the loins and two in front. Through drainage tubes placed therein he keeps up continuous irrigation.

Perforated Gastric and Duodenal Ulcers.—Dr. John H. Gibbon read a paper on this subject in which he discussed the symptomatology and classification of these lesions. He has operated upon three cases. They demand immediate opening, better through the rectus muscle, flushing, drainage. It is unnecessary to excise the ulcer, as turning it in suffices. Extensive irrigation with salt solution is the better plan.

Extensive Decapsulation Combined with Fixation of Every Movable Kidney to Prevent Bright's Disease.—Dr. R. H. Gibbons, of Scranton, said that as every movable kidney is a menace to health, even if there is no symptom, he recommends fixation in every case. In pregnant women with evidence of renal inadequacy and movable kidney, decapsulation should be done.

Dr. Ramon Guiteras, in the discussion, said that anuria had been the result of operation in some cases, though in others it had been relieved by a similar procedure.

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The Indications and Technic of Vaginal Drainage for Suppuration in the Pelvis.—Dr. Albert Goldspohn, of Chicago, discussed the chief routes by which infection entered the female pelvis. He described the type of pathological changes resulting from each route. While pelvic cellulitis was rare and of little significance in non-puerperal infections, *via* the tubes, it was the leading or primary anatomical change in puerperal infections, *via* the lymphatics. When vaginal evacuation of the pus in pelvic suppuration needed to be followed by a more radical secondary operation, in many cases it enabled the inflammation in the associated uterus or tubes, or ovaries, to subside during the interval, so that they need not be removed as would have been deemed necessary if a radical operation had been performed in the first instance or during the acute stage. Vaginal drainage helped to save life in cases that had become too feeble for a radical procedure to be applied at once. Preliminary drainage improved their condition so that they could stand a radical operation later, with no higher rate of mortality than obtained after abdominal section in other cases that were not so reduced. This operation should never be a puncture with a trocar, knife or scissors, but should always be a transverse incision into the posterior cul de sac, preferably with the thermocautery. From this entrance, as a vestibule, laterally located purulent accumulations, if not yet opened, were best attacked by a finger assisted by a forceps. He mentioned the details of the after-treatment. Only a small proportion of the cases so treated by him had required another operation, except when the infection was from the vermiform appendix.

Shortening of the Round Ligaments by the Blunt Hook Method.—Dr. H. W. Longyear, of Detroit, Mich., described this method of shortening the round ligaments, as follows: "The location of the internal

ring is determined by finding the point of crossing of Poupart's ligament and femoral artery, as the ring is situated immediately back and above it. Beginning half an inch inside this point and cutting toward the pubic end parallel to Poupart's ligament, a one-inch incision is made through skin, fat and superficial fascia. Eye retractors and blunt hooks are then used, the tissues separated down to the aponeurosis of the external oblique, which is thus laid bare to the eye, to the extent of about one square inch. A puncture is now made through this aponeurosis one-quarter of an inch long, situated just above Poupart's ligament and to the back of the square inch of cleared aponeurosis, and through this the blunt hook is inserted and the ligament drawn out, usually with more or less of the fat of the canal along with it. The ligament is isolated and its fibrous attachments stripped back toward the internal ring with blunt pointed dressing forceps, the ligament drawn out to the necessary length, an aneurism needle passed through the aponeurosis and the loop of ligament drawn through this, folded back on itself, and, with one stitch of kangaroo tendon, made fast, the suture embracing in its grasp the edges of the aponeurosis where the ligament first passes through it, half of the ligament at the same point, and half on each side of the loop that is folded back on it. The skin is then closed by a running catgut suture, and dressings applied. The operation is applicable only to cases of mobile uteri without diseased appendages, in which cases it is an ideal procedure, or to cases in which adhesions may have been previously broken up by abdominal section.

"A number of devices have been resorted to for the purpose of catching the ligaments and suturing them through the abdominal incision and thus avoiding the making of the secondary operations in the groins, but they cannot expect to equal the method which leaves the shortened ligament in exactly its normal position."

Total number of cases operated on by this method, 58; cases in which late examination had shown uterus to be in normal position, 48; cases which showed uterus in normal position two to five months after operation, and were then lost sight of, 6; partial failure, 1; complete failure, 2; uterus held in normal position when but one ligament was shortened (total number of such cases), 3; failure to find either ligament, 1; failure to find more than one ligament, 1; confinement after operation and uterus remaining normal afterwards, 3; uterus retroverting late after operation, caused by new adhesions and relieved by breaking up adhesions through abdominal incision, 1. The total additional operations performed at the same time as the Alexander operation were as follows: Perineorrhaphy, 24; trachelorrhaphy, 20; curettage, 53; abdominal section, 3; operation on hemorrhoids, 3; freeing of prepuce of clitoris, 2; amputation of cervix, 1; posterior colporrhaphy, 1; cautery of caruncles, 1; dilatation of sphincter ani, 1. The interior of the uterus was examined with the curette in all cases that had not been previously, at a recent date, curetted; occasionally a curettage was not necessary, but usually the uterus which had remained in retroversion for some time would be found to contain more or less degenerated mucosa.

The Need for Study of the Symptoms of Perforation in Typhoid Fever, and the Life-saving Possibilities of Early Operation.—In a paper on this subject, Dr. W. D. Haggard, of Nashville, Tenn., stated that only about 300 cases of operation for intestinal perforation in typhoid fever had been reported since the first case in 1884. Granting that this represented only one-half or one-fourth, the number was pitifully meager when it was computed that 25,000 persons died yearly in the United States from perforation and peritonitis in typhoid fever.

He made a plea for an early diagnosis and an attempt, at least, to save a part of this appalling number. On a basis of a possible thirty per cent. recovery, which was shown to have been attained in the reported cases, 7,500 lives might be preserved yearly by prompt operation. The difficulty lay in making an early diagnosis. The abdomen of typhoid cases should be exposed and carefully examined daily. No abdominal symptom or sign should be considered trivial. Pain was usually the first note of alarm—sudden, severe, colicky and persistent. Collapse at the time of perforation occurred in only 6 or 7 per cent. Fall in temperature, while not constant, was significant; but prompt rise in pulse was uniform and a symptom of the highest value. Tenderness, rigidity and localization of pain commonly occurred in the order named. Continuance of pain would distinguish it from colic. Exploratory laparotomy, under cocaine, if necessary, was earnestly urged as a diagnostic measure in suspicious, but doubtful, cases. A plea was made for recognition and interference with the early and mild symptoms, and the classical picture of perforation so-called; the drawn features; cold extremities; feeble pulse; sighing respiration; distended abdomen; restlessness and delirium were not symptoms of perforation *per se*, but of the consecutive peritonitis and, really, of impending death. A man in the second or third week of a mild attack of typhoid without previous abdominal symptoms, and progressing without incidence, who was suddenly seized with acute, paroxysmal, colicky pain in the right iliac region, that caused him to cry out, that did not subside or was not relieved by the ordinary measures, followed by a drop in temperature and a sudden rise in the pulse, and heightened temperature, succeeded by sensitiveness and right-sided rigidity, and a rapidly increasing leucocytosis, might be said to have perforation, not absolutely, but with sufficient assurance to demand immediate exploration.

It was admitted that all cases did not present the typical symptom-grouping, and an analysis of the value of the various symptoms was detailed. Statistics of all the reported cases were presented as regards the greater frequency in men, the rarity in children, the predilection of occurrence in the second and third weeks, the preponderance of location in the ileum; the likelihood of finding the perforation single (84 per cent.); the relative locations in the various portions of the canal, and the uniformity of death without operation.

The surgeon should stand in close relationship with the physician in all typhoid cases, as was done in appendicitis. Doubtful cases should have the closest surveillance and operation at the first indication of a beginning peritonitis.

Dr. Haggard reported three consecutive successful operations for intestinal perforation, two of which were localized; one with abscess: one with localized peritonitis, simulating appendicitis, with three perforations, and one operated on 8½ hours after the onset of pain, on the twelfth day of a mild attack. Operation was performed at night in a farmhouse by lamplight. The technic was described, and statistics presented showing a recovery rate of thirty-six per cent. in cases of perforation before the advent of peritonitis; of 47.3 per cent. in cases of localized peritonitis, and 21 per cent. in cases of generalized peritonitis. An earnest advocacy was made for a realization of the possibilities of life-saving in this hopeless class of sufferers.

Memorial Address.—Dr. Lewis S. McMurty, of Louisville, Ky., delivered the Memorial Address on Dr. William E. B. Davis, of Birmingham, Ala. Among

other things, he said that no man enjoyed a more honorable career; no one had brighter prospects for years of useful and enjoyable service.

Much earlier than was customary in the medical profession, he had attained the fruition of his hopes. He was a recognized leader in scientific accomplishments; enjoyed the respect of his professional brethren in a remarkable degree, and possessed a large and devoted clientele. He lacked at the time of his death eight months before reaching the age of forty years. His ability, his energy, his incessant activity, his enthusiasm and capacity for concentration of thought and labor had placed him in the line of demonstrated success and authority at an age when the members of the medical profession were usually only beginning to receive merited recognition.

Dr. Davis was born at Trussville, Jefferson County, Alabama, Nov. 25, 1863, and was killed instantly by accident at a railway crossing in the city of his home, on Feb. 24, 1903.

Dr. McMurtry gave an outline of the character of an earnest, honest, able and intense man, who, dying before the age of forty years, had done the work usually encompassed in a good long life. He was a leader among the members of the profession, respected, trusted and beloved. His memory would be revered and cherished in his home by the loved ones there, and his name and fame would remain with the people of the city which was his home in his native State. The statesman and soldier left his monument in bronze and stone; the man of wealth in the colossal fortune that perpetuated his name; the author and poet in pages of thought and songs that lived, but Dr. Davis, who had joined the silent majority, he says, had a thousand monuments in the hearts of those who knew his good offices and appreciated his generous character.

Some of the Sources of the Disappointments of the Surgeon.—This was the title of the President's Address, delivered by Dr. L. H. Dunning, of Indianapolis, Ind. He said it was not his purpose to present an address filled with pessimistic statements, gloomy forebodings or records of unhappy failures. There was no more pitiable object than that of an elderly physician or surgeon, who, after having passed a quarter or half century in successful endeavor in the practice of his calling, in the declining years of his life fell into pessimism or disbelief. To lose hope in one's successful endeavor and faith in the beneficence of one's lifework was heart-breaking. He once knew a surgeon of this sort who, during a splendid career as teacher and practitioner, reached an exalted position, and who, after his powers began to decline, became a skeptic as regards the curative value of medicine and surgery. A few years later found him specializing in the use of a secret remedy, the constituents of which he did not know, and later still he had entirely lost the confidence of his former patrons and became a cynical old man, entirely dependent upon the support of an accomplished daughter, whom he had educated in his prosperous days. From such a fate, and from other unhappy states that must surely come to a surgical doubter or scoffer, said Dr. Dunning, "may we all be delivered." He begged of his listeners not to hear a pessimistic note in his address. The motive that actuated the writer was one of inquiry to the end that the causes of disappointments in surgery might be ascertained, so that in the future they might be avoided. He believed in surgery, and practised it because he had faith in its beneficent power and had experienced some of the joy that came with a moderately successful endeavor. It could not be denied, however, that surgeons met with their full share of disappointments. Judging from medical journal reports, one was led to believe that there were not a few of these disappointments in the paralysis following the bloodless operation for the cure of congenital dislocation of the femur. The successful extraction of a cataract from the eye had given promise of restoration of sight to the organ operated upon, yet when a sufficient time had elapsed it was found that the patient must walk in total darkness the remainder of his days. A woman was racked by pain in the ovaries, which organs were prolapsed and inflamed. They were extirpated under the belief that such procedure would bring to the patient not only relief from suffering, but also restoration of health, so that she might again with joy take up and discharge the duties of life. Alas! This was not infrequently a delusive hope. Former successes led the surgeon to promise himself and his patient restoration to health or relief from fear of recurrence of an ovarian cyst, if it were extirpated. Upon opening the abdomen, a papillomatous cyst with secondary peritoneal involvement was found, and the surgeon knew that his hope must fall. After months of thorough study and experimentation, a surgeon brought forward a new procedure, the execution of which he believed would prove a means of lessening the mortality of some grave operation, or would diminish the risks of recurrence of some malignant lesion. The technic seemed scientific and its execution was accomplished with ease. The profession accepted it; its popularity grew so that in a few short months reports of cases were published in many countries and languages. After a time, when a great number of histories of cases had accumulated, it was found that less good had been accomplished by this means than by former long-used ones. The above were a few examples which he thought made plain the idea entertained by him in his discussion of the subject. One of the sources of disappointment which he mentioned related to the surgeon and his environments. The most nearly perfect surgeon was one who ordered his life with the utmost acre. Nature must have been profuse in her gifts to him; a good constitution, excellent health, superior intellectual and temperamental endowments, an indomitable will, inflexible purposes and high moral susceptibilities. His training should be for the development of these faculties, together with the special training that would give him the requisite knowledge and skill to do high grade special work. Add to this good judgment, self-control and moderation in all things, and we had the essential elements of a successful surgeon. Disappointments in greater or less degree would come to all surgeons, be they ever so successful, for it seemed to be the natural order of things that contrasting or antagonistic elements existed side by side. The man who became despondent and inactive because of this was the weak man. The strong man would endeavor to magnify the good and crush out the evil. He would in so far as it was possible remove the ugly and retain the beautiful. The surgeon's hope should be to eliminate every preventable source of failure, and when failures came to make of them task-masters compelling the way to better things.

The Rational Treatment of Post-partum Infections of the Uterus.—Dr. D. Tod Gilliam, of Columbus, Ohio, said the rational treatment of post-partum infections of the uterus presupposed a knowledge of the infecting agencies, their nature and tendencies, and of the conditions which favored or retarded their entrance into the general system. The bacteria or puerperal infection were the same that took part in other pathological processes of the genital tract, chief among which were the streptococcus, gonococcus, colon bacillus and the saprophytes. Saprophytic or putrid infection occurred when fetal detritus—fragments of placenta or

membranes—had been left in the uterine cavity. It was pernicious only through its products, the toxins, and would cease to do harm so soon as the fetal débris was expelled from the uterine cavity. Both the colon bacillus and the gonococcus were surface germs showing little tendency to penetrate into the depth of tissues or to disseminate through the general system.

The streptococcus was the most deadly of germs connected with puerperal infection. It might and did proliferate in living tissues. While all of the germs were capable of producing invalidism, there was only one, namely, the streptococcus, that jeopardized life. This assertion was to be taken in a general sense, as other bacteria had on occasions been the cause of severe or even fatal infection. It became, then, important to distinguish between streptococcus infection and that of other germs. Unfortunately, there was no sure method, even the microscope at times being inefficient or misleading. Clinically, putrid infection was usually characterized by high temperature, slow pulse and foul odor, whereas in streptococcus infection, there was no odor in the earlier stages, and the pulse was markedly accelerated. There might be suppression of lochia. The normal death rate for puerperal infection was about one per cent. This was increased in epidemics, which were usually due to streptococcus infection. The death rate from streptococcus infection was about five per cent., and these constituted about one-fourth of all cases of puerperal infection. Hence, about 98 or 99 cases out of a hundred should recover, if let alone. A recently delivered uterus was a hotbed for infection, being filled with the juices of disintegration and spilled blood. The mortality would be appalling were it not for the safeguards. These were: (1) Auto-sterilization of the genital tract; (2) the protective epithelium; (3) the protective leucocytes under the epithelium. The germ of Döderlein was the principal agent in sterilizing the genital tract; hence irrigation before or after labor was harmful, because it washed this germ away and did not entirely rid the tract of pathogenic germs. It was impracticable to clear the uterine cavity of pathogenic germs by curettage or flushing, as many of the germs were ensconced in the depths of the utricular glands, and could not be reached, hence curettage or flushing by opening avenues of infection without getting rid of the pathogenic germs was harmful and dangerous. The epithelium was usually an efficient preventive of germ invasion. The protective leucocytes under the epithelium gave battle to the germs, and unless overwhelmed would prevent their entrance into the general circulation. The normal death rate of puerperal infection was about one per cent., but after curettage it amounted to twenty per cent. The sharp curette was especially dangerous, as it not only failed to remove the germs, but destroyed the protective barriers. As it was impossible to say that streptococcus infection was not present in any case, the only safe way was to eschew the sharp curette entirely in puerperal infection. Curettage was only permissible where there was known to be fetal débris in the uterine cavity, and where there was reason to believe no streptococci were present. For this the finger or dull curette with stiff handle should be used. Flushing, if done at all, should be done with every precaution against infection. The patient should be on a table, under a good light, the vulva and vagina cleansed, the latter with 5 per cent. creolin in liquid green soap, mopped, dried, and retractor introduced: the cervix grasped, drawn down and steadied with forceps; the cervical canal wiped out with gauze and bits of membrane picked off with forceps. Gently introduce irrigator and flush. If pulse and temperature should drop, repeat daily or oftener, otherwise discontinue. Alcohol might be instilled according to Ill's modification of Carosso's method.

Penetrating and Perforating Gunshot and Stab Wounds of the Abdomen.—This was the title of a paper presented by Dr. John Young Brown, of St. Louis, Mo. The author went fully into the literature of this subject. An analysis showed nine cases of perforating wounds of intestines, with six recoveries and three deaths. Of the deaths, one was due to shock, the injury being so extensive that the patient never reacted. The author's second case entered the hospital with general peritonitis, and while a perforation was overlooked, it was probable that the result would have been the same if this injury had been repaired. The third case, he thought, could have been saved. Of the wounds of the liver, five cases in all, four recovered and one died. This case died three hours after operation from shock, the result of hemorrhage. A case of wound of the pancreas recovered. To these cases he added eight where laparotomy was done and no injury to viscera found, making a total of 23 cases, with 19 recoveries and 4 deaths.

The Use of the Stem Pessary for Infantile Uteri, Scanty Menstruation, Amenorrhea and Dysmenorrhea.—Dr. J. Henry Carstens, of Detroit, Mich., followed with this paper. He cited a number of intractable cases of this kind, which were promptly relieved by the stem pessary. The theory was that weak or poorly developed muscles could only be strengthened by constant exercise. The only way to exercise the uterine muscles was to introduce something into the uterus, and the constant tendency to expel the contents would enlarge the muscles and develop the uterus. It was absolutely essential that no pelvic trouble, either chronic or latent, existed. The diagnosis must be perfect. The use of the stem pessary was valuable in infantile uteri and in atrophy of the uterus. In amenorrhea, including scanty and irregular menstruation, especially as found in fleshy women, it was also of great value. It might be used with great advantage in simple cases of retroversion in young girls, and cases of stenosis or tortuous uterine canals. He used the Chapman hard rubber pessary, and left it in from six months to two years.

Tuberculosis of the Female Genitalia and Peritoneum.—This was the title of a very exhaustive paper contributed by Dr. John B. Murphy, of Chicago. The author considered at great length tuberculosis of the vulva, vagina, portio vaginalis externa, cervical canal, fundus uteri, tubes, ovary, pelvic peritoneum and general peritoneum.

Movable Kidney With Secondary Cyst Formation, Resembling Ovarian Cyst.—In a paper on this subject, Dr. Rufus B. Hall, of Cincinnati, Ohio, said that until recent years the consensus of opinion of the profession was that a movable kidney was not dangerous to the life of the patient, and that this condition did not call for operative treatment until the patient suffered extreme pain or developed serious structural changes. Almost the universal practice at this time was not to interfere until compelled to do so, either on account of torsion of the pedicle or some serious pathological lesion. While only a small per cent. of patients suffering from movable kidney had obstruction of the ureter, necessitating an operation for relief, a very large per cent. were more or less invalids. In all patients suffering from hydronephrosis, with periodical attacks of pain, the urine contained pus for three or four days after the attacks. He contended that if the cases of movable kidney were operated upon early for fixation of that organ, it would save structural changes, give great relief, and he advised operation early. He also believed that the movable kidney, if neglected, might undergo

cyst formation or develop hydro- or pyonephrosis, and in rare instances develop into large tumors holding several gallons, as in the cases reported.

Surgery of the Ileocecal Valve for Malignant Disease.—Dr. N. Stone Scott, of Cleveland, Ohio, read a paper on this subject. The fact was well established that the pylorus and rectal valves were peculiarly liable to inflammatory diseases, with consequent hypertrophy, or contraction of the tissues and attendant partial obstruction of the tract. It would be most natural to suspect the other one of the three, the ileocecal valve, of similar tendencies. Three or four typical cases were quoted. The rarity of recorded cases was not so strange when one considered the virginal character of the territory under discussion. Medical literature gave not only a scarcity of cases, but no adequate description of the disease or its diagnosis, its cause, or its cure. Most of the author's own cases had either been the subject of stenosis in other parts of the alimentary tract, showing a decided tendency to hypertrophic inflammation in certain portions of the tract, or had had typhoid fever. There was a reasonably clear history of this in all but one of the seven cases reported by the author.

The Choice of Methods for Closing the Parietal Abdominal Incision.—Dr. Edwin Ricketts, of Cincinnati, Ohio, discussed this subject. In referring to the various suture materials used for closing incisions, he said that to his mind the through and through suture of silkworm gut with the midway closure of the peritoneum with interrupted sutures of fine silk would permit surgeons to nearer attain the ideal method than any other. Silkworm gut was actually impervious to any attacks of infection. While it was a foreign body, it was to be removed between the fifth and the tenth day. One great advantage of silkworm gut was that, keep it as one may, there was no germ to gain a foothold within its body substance. It was easily rendered aseptic from an immersion in hot water, to be dipped in alcohol just previous to placing the same. Possibly the oldest suture material for through and through work was silk—pure silk. Some prominent operators of today make use of it. With thorough asepsis in the care of this silk, it was a question in his mind if this material could not be used successfully, as the silkworm gut, for through and through suture, provided it was removed within five days.

Supravaginal Amputation for Fibroid Tumors.—Dr. Herman E. Hayd, of Buffalo, N. Y., read a paper on this subject. Supravaginal amputation had such a small mortality, not more than 5 to 6 per cent., with all kinds of cases, complicated as they so often were with hydro-, hemato-, or pyosalpinx, that one could in good faith recommend it when once he was satisfied that the tumor was progressing in size and its symptoms were demanding active treatment. He was of the opinion that overconservatism was even more dangerous than extreme radical surgery, as every day patients were depleted from frequent floodings, and died of some simple intercurrent disease because self-resistance was reduced to a minimum, or pressure symptoms were left unrelieved until dangerous complications were excited in the bladder, ureters or kidneys. The only other operation he had employed for the removal of the uterus for fibroid tumors was complete hysterectomy, or panhysterectomy, abdominal and vaginal. The operation of total hysterectomy offered very few advantages. It was more difficult to perform; had a higher mortality; took more time, and had increased danger from hemorrhage, and it robbed the vault of the vagina of the support which the cervix gave it. However, in certain cases it should be the operation of election when the cervix was the seat of marked cystic degeneration, or had a bad tear, and particularly if associated with considerable vaginal prolapse, or where, for any reason, drainage would be desirable. The author said he could have gone into a discussion of the field of myomectomy and the questions concerned in the advantages of the vaginal over the abdominal route for certain fibroid polypi and small tumors of the uterus, but had been content to place himself on record as believing that the supravaginal amputation for necessarily operable fibroids met nearly every indication demanded of the abdominal surgeon, and could be applied, and had been applied, to every conceivable kind of tumor, with short or long pedicle, tumors growing deep into the pelvis, or cut into the broad ligaments, and with results which made it a clean and ideal piece of surgery. It was the operation of choice, excepting in those cases where drainage must be provided for, or where the cervix, for various other reasons, should be removed. The author presented a table giving a list of his supravaginal amputations, fourteen in number, with one death. The operation by preference which he performed was that by Baer, and modified occasionally after the suggestions of Kelly and other more recent operators, when some special indication existed for its employment.

The Pelvic Musculature in Disease.—Dr. Hugo O. Pantzer, of Indianapolis, Ind., read a paper on this subject. The symptoms in pelvic disease arising from the unstriped and voluntary musculature of the pelvis were unmistakable and had important definite diagnostic significance. The text-books were inadequately expressive on this subject. Two extreme cases were narrated in detail. The first case dealt with a subperitoneal hemorrhage involving both broad ligaments. While there was active hemorrhage going on, the muscles of the pelvic floor were in spastic, painful contraction. This symptom had been found available in differential diagnosis between pelvic hematoma and hematocele. The second case described similar contraction of the pelvic musculature observed in a case of gangrenous appendicitis.

Veratrum Viride in Surgical and Obstetrical Practice.—Dr. Charles L. Bonifield, of Cincinnati, Ohio, in a paper on this subject, said that the physiological action of veratrum had been carefully studied by Dr. H. C. Wood, who says that "it is a cardiac and spinal depressant." Veratrum slowed the pulse, but the author did not believe that it lessened the force of the beat, when used medicinally, except it produced nausea. It stimulated the liver, kidneys, skin and salivary glands, and it lowered temperature and relieved inflammatory pain by its effect. These properties make it valuable in the treatment of localized peritonitis. In appendicitis the appendix should, if possible, be removed during the first twenty-four hours. When this could not be done, the Ochsner treatment should be given, supplemented by the hypodermic administration of veratrum.

Acute salpingitis was usually treated by hot and cold local applications to influence the circulation. These were valuable, but the circulation could be more profoundly affected with veratrum, and it was therefore more valuable. Local treatment could, however, be used at the same time the veratrum was, with advantage.

In the treatment of postoperative peritonitis free purgation was of the greatest importance, and should never be neglected. But in some cases, after the bowels had been thoroughly evacuated, the exceedingly rapid action of the heart indicated that that organ would exhaust itself before convalescence could be established. In this condition there was no drug equal to veratrum. It was superior to strychnine or digitalis, because, while they might stimulate the heart to act for a time with

renewed vigor, it made the work of the heart easier, and gave it a chance to rest between beats.

Although veratrum had been used for thirty years in the treatment of eclampsia by a considerable number of practitioners without a fatality, it was acknowledged by everyone, who had given it a thorough trial, to be superior to chloroform, morphine, or any other drug in general use. Obstetric text-books almost without exception failed to recommend it with any enthusiasm. Valuable papers had been presented to the American Gynecological Society on the use of this drug by Jewett and Reamy; also, a paper by Dr. A. B. Isham, before the Cincinnati Academy of Medicine, on the general use of the drug, which was published in the Medical News.

Ovarian Grafting.—Dr. Robert T. Morris, of New York, detailed some experimental work in connection with this subject. His results showed that an ovary grafted from one patient into the same patient had a tendency to retain its character as an ovary, to continue to furnish ova, to continue to furnish its internal secretion, and to carry on the function of an ovary, no matter at what point it was transplanted into the host, but preferably at some point near the point at which the ovary formerly grew. An ovary transplanted from one patient into another had a tendency to degenerate, and did degenerate. One could not make an ovarian graft practically from one patient into another at the present time, because the graft was absorbed. The tissues of one patient were destructive to those of another. The ovary underwent fatty degeneration or absorption, and this was the line of experimentation upon which he and his assistants were at work now. By making one series of rabbits immune from the serum, and by making another series of rabbits immune from extracts of rabbits, absorption or fatty degeneration of the graft from one patient to another, might be prevented. At the present time he had reached this point in the practical use of ovarian grafting: (1) If, in a case of pyosalpinx, the ovaries and oviducts had to be removed en masse, the patient would suffer from a precipitate menopause, if she was left without an ovary. If a piece of ovary from this patient be taken, or a piece of ovary taken from another patient operated upon at the same time, be taken and put in a salt solution at a temperature of 100° F., and then engraft in the broad ligament of the patient who had lost her ovaries and oviducts a piece of her own ovary or a piece of the ovary of another patient, it avoided a precipitate menopause. That patient would continue to menstruate. She would continue to have the comfort that goes with the possession of an ovary. But if an ovary be grafted from another patient, at the end of a year, perhaps, the grafted ovary will have practically disappeared and her menopause begin. If a woman be grafted with a piece of her own ovary, the menopause might not begin for some years afterward, or until the normal time for it. This was a practical point, he said, which surgeons could apply in their everyday work. (2) A patient grafted with a piece of her own ovary might become pregnant, if a tube and oviduct on one side were left, or part of the tube on one side. A patient grafted with a piece of an ovary from another patient might become pregnant, if pregnancy occurred quickly. This had occurred twice with rabbits during his experimentation. But pregnancy must occur before degeneration has gone to such a point that the ova are not well formed. We must not expect pregnancy to occur as late in grafting an ovary from another patient. We might expect it after grafting a patient with a piece of her own ovary. There were many cases in which the ovaries must be sacrificed, in which part of a tube or an entire oviduct on one side could be saved. This was another point of practical importance. Pregnancy might be expected to occur in a small proportion of cases. He expected to obtain further good results. He was hopeful. Thus far it was known that a precipitate menopause could be prevented. Furthermore, the internal secretion of the ovary of a patient could be retained.

Dr. John B. Murphy would like to know how Dr. Morris transplanted this kind of ovary. In January or February of this year he removed one ovary in connection with a fibroid tumor and transplanted the ovary into a monkey. He split the ovary, transplanted half of it subperitoneally and the remaining half intraperitoneally. He removed it thirty-two days afterward, and sent it to the pathologist, without any statement as to what was done, and asked him for an opinion as to the condition of the ovary. The pathologist reported that the ovary was absolutely normal in every respect.

Dr. Herman E. Hayd said that if the processes of ovulation and menstruation would go on whether an ovary be transplanted intraperitoneally or extraperitoneally, there would be infinitely less danger if the piece of ovary was transplanted into the abdominal wall. In other words, one need not worry about his technic if menstruation would go on just the same.

Dr. Murphy said the transplantation of an ovary intraperitoneally was fatal. He asked Dr. Morris what he did, as it was well known that the peritoneum would eat rapidly everything brought in contact with it.

Dr. Albert Goldspohn said that he had not utilized ovarian tissue that had been completely severed from its original connection, fearing that it might seriously interfere with function. That ovarian tissue would do good otherwise, so far as establishing secretory function was concerned, was proven by experiments made by a German whose name he could not recall. He recalled to mind two instances. In one case there was only a slight vestige of an ovary. It looked like a mass of denuded raw connective tissue, although there was ovarian tissue in it. The remnants were connected with a little bit of connective tissue. In another instance there was more connective tissue. He swung the ovary around to the nearest accessible healthy peritoneal surface in the two cases and stitched it with fine catgut, and said that both of the women menstruated; one for two months after abdominal section, and the other had menstruated regularly since. She was enjoying very good health. So far as the sexual appetite was concerned, there seemed to be no difference.

Dr. James F. Baldwin said that if one were transplanting an ovary for the purpose of preventing the ill effects of the menopause, and not with the idea of future pregnancy, this being of minor importance, why may he not, in a patient who has been operated on several months before, make an incision down to the peritoneum, make a little pocket, and drop in the healthy ovary from patient No. 2, and close the incision? In cases in which an ovary had been embedded in the densest adhesions in the pelvis, the women had gone on menstruating, but had not conceived; yet it seemed to him entirely unnecessary that the ovaries had anything to do with the peritoneal cavity, except with the idea of pregnancy, not with the idea of continuing their function and preventing the menopause and nervous symptoms.

Dr. Morris, in closing the discussion, said that an ovary that had been grafted might be found perfectly normal at the end of thirty-one days, at the end of ninety days, or even at the end of six months or a year. On the other hand, an ovary that had been grafted from one patient into another would not be found to be normal at the end of that period. In a se-

ries of rabbits operated on something over a year ago, in every one he found ovarian tissue at the end of twelve months. He found the ovary still perfectly normal when the rabbits were grafted with pieces of their own ovaries. The corpus luteum was an organ having a special function. It controlled menstruation. So long as a corpus luteum was formed in a grafted ovary, the patient would menstruate. When a corpus luteum was not developed, then the patient ceased to menstruate. He said it was necessary to get lymph circulation in order to keep the ovary alive. Were it not for this lymph circulation the ovary would become absorbed, because the peritoneum would digest beefsteak. The ovary must receive a lymph supply. In a few days there were capillaries and a complete ovarian circulation. He had seen good-sized arteries surrounding a grafted ovary, but not actually in it. He had not noticed infection in any of the rabbits that he had experimented on. As to bringing back menstruation when it had disappeared, he mentioned the case of a nurse who had had her ovaries removed two years previously. She had ceased menstruating. He brought back menstruation in her case so that she menstruated regularly for several months. One young woman with an infantile uterus, after receiving an ovarian graft, menstruated for a year. The graft then became absorbed, since which time she had ceased menstruating. This was a new line of work, and while there might be some disappointments, practical points were being brought out that were going to be of great value to the profession.

A Consideration of Combined Ectopic and Intra-Uterine Pregnancy, With Report of a Case.—Dr. F. F. Simpson, of Pittsburg, Pa., read a paper with this title. The combination of ectopic with intra-uterine gestation in the same patient was termed compound pregnancy. Cases of this kind recorded in literature were grouped as follows: *Class* 1.—The woman became pregnant while carrying the dead products of an ectopic gestation. *Class* 2.—The ectopic and intra-uterine products of conception were both living at the same time; (*a*) ectopic conception preceded the uterine—three cases only; (*b*) ectopic conception followed the uterine (?); (*c*) ectopic and uterine conception occurred coincidently —98 cases. The condition was being recognized more frequently. Prior to 1803, but 56 cases were found, while in the next decade an equal number were recorded. The common errors in diagnosis had been (*a*) the recognition of the uterine pregnancy and mistaking the ectopic for an inflammatory condition or neoplasm; (*b*) the recognition of ectopic and overlooking the uterine pregnancy. It was incumbent upon teachers and authors to give the subject proper recognition by reason of its actual frequency and perilous course.

Treatment in many particulars was identical with that of simple ectopic. It varied with the duration of the ectopic, the degree of its integrity, and the patient's power to withstand the treatment or the disease. It differed from the treatment of simple ectopic by reason of the third life in question, and the varying exigencies of its existence. To the ordinary dangers of ectopic pregnancy were added the dragging and pressure of the enlarging gravid uterus, and its evacuation prematurely or at term. There was, therefore, greater reason for appropriate and timely surgical intervention in compound than in simple ectopic pregnancy. As the ectopic fetus was rarely delivered alive, it should be disregarded when considering proper treatment, unless almost visible and proper surroundings render delay safe. The greatest safety to the mother and her offspring (uterine) lay in the removal of the ectopic products by abdominal section. Accompanying the paper was a table of 118 cases the author had been able to cull from literature, including the report of one of his own. A woman, aged twenty-four years, became pregnant coincidentally in the uterus and tubes. The tube ruptured, and was removed by abdominal section. Convalescence was normal. Uterine pregnancy continued, and a living child was delivered at term.

Emergency Abdominal Surgery at the Patient's Home—A Demonstration.—Dr. Willis G. MacDonald, of Albany, N. Y., in discussing this subject, said that abdominal surgery became imperative and immediate in its demands in appendicitis, perforations with typhoid fever, or gastric and duodenal ulcer, acute gangrenous cholecystitis, acute pancreatitis, acute intestinal obstruction and hernia, ectopic gestation, conditions requiring Cæsarean section, and penetrating gunshot and other wounds of the abdomen. Patients suffering from any of these conditions would not admit of delay in operation, or withstand the shock of transport from points remote from hospitals. Operation in the patient's home became a necessity. The surgeon must be prepared to treat such emergencies without delay. Conditions for aseptic operations in private houses were difficult to attain. He alluded to the selection of a room for operation, kitchen or dining; dust, operating table and utensils, water supply, etc. The dry method in operations presented distinctive advantages. The paraffin gauze tamponade was a useful device. The surgeon's traveling case (field outfit) must be complete. In making provisions for anesthesia and its complications, he emphasized the importance of skin sterilization of the field of operation, and of the surgeon's hands. He alluded to the immediate aseptic surroundings of the field of operation, and said that sufficient instruments and rubber gloves should be at hand with suitable sterilizer; sponges and tampons for dry method; a suitable sterile dressing, general abdominal flushing and saline infusion; drainage-glass, rubber and gauze. The surgeon's traveling outfit must be clean, complete, compact and mobile, independent of express—or baggagemen—always ready and available when required and sufficient for complete aseptic surgery under the most adverse conditions.

Ectopic Pregnancy.—Dr. Henry T. Ingraham, of Buffalo, contributed a paper on this subject. He reported 12 cases of ectopic pregnancy that he had operated upon. A careful serial microscopic examination was made of the removed tubes and ovaries. In only 3 of the 12 cases were there any signs of previous inflammatory disease, with loss of epithelium in the tubes. In one case there was obstruction of the lumen of the isthmus, probably due to congenital malformation. In two cases the corpus luteum of pregnancy was not found in the ovaries removed. Although the number of cases reported was too small from which to draw conclusions, yet he was inclined to think that previous inflammation of the tube had but little to do in causing ectopic pregnancy. That the only condition discovered in any of these cases that could be the cause was the case of constriction of the tube, the cause of which at present was unknown. The two cases in which the corpus luteum of pregnancy was absent gave additional proof to the theory of external transmigration.

Officers.—The following officers were elected for the ensuing year: President, Dr. Walter B. Dorsett, St. Louis, Mo.; First Vice-President, Dr. A. B. Miller, Syracuse, N. Y.; Second Vice-President, Dr. W. D. Haggard, Nashville, Tenn.; Secretary, Dr. Wm. Warren Potter, Buffalo, N. Y., re-elected; Treasurer, Dr. X. O. Werder, Pittsburg, Pa.

The time and place for holding the next annual meeting of the Association were left to the Executive Council to decide.

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ORIGINAL ARTICLES.

BRONCHIECTASIS IN THE TUBERCULOUS. AN UNUSUAL CASE REPORTED.

BY S. EDWIN SOLLY, M.D.,

OF COLORADO SPRINGS, COLORADO.

DR. FRIEDRICH A. HOFFMANN, of Leipzig, in his article upon the bronchi in "Nothnagel's Encyclopedia of Practical Medicine," writes[1] "as a fundamental principle we may accept the axiom that tuberculosis may occur as a complication of bronchiectasis, but not the reverse, which is practically correct." He also says[2] "in a certain number of cases tuberculosis complicates the clinical picture of the bronchiectasis. While the one is not excluded by the presence of the other, they do not co-exist very frequently. Smaller bronchiectacic areas which have no special clinical significance are not infrequent in tuberculosis. There is a tendency to formation of larger bronchiectacic areas in tuberculosis only in cases which tend to recover by the formation of connective tissue and these are always from circumscribed processes occurring in the apices of the lungs. Emphysema of the lungs of a higher degree is often found in the final stage of bronchiectasis, which begins as an emphysema of the borders of the lungs representing a kind of compensation to aid in the filling out of the pulmonary space in the thorax; its occurrence is favored by coughing."[3]

These statements accord with my own clinical experience. When we find clearly marked bronchiectasis in a case of pulmonary tuberculosis, it is nearly always in an old chronic case of fibroid phthisis, in which the fibrosis is so extensive as to cause dyspnea upon even moderate exertion. I need not dwell on the diagnosis between an enlarged bronchus and a cavity, you Fellows of the Climatological are too well acquainted with the classical picture. Nevertheless, even the highest authorities are sometimes mistaken in their diagnosis, but in most instances it is not difficult for the trained observer to distinguish between them.

The case that I wish to bring before you has quite unusual features and, so far, I have not been able to find a record of a similar one. It has rather a long history, of which I will present the salient points:

Case.—Mrs. O., residing in Western New York State, aged forty-eight years, had enjoyed fairly good health except for a tendency to catch cold in the spring and get run down. In May, 1900, she caught a more than usually bad cold and became much depressed by it. The diagnosis made by the family doctor was bronchitis, but there was no examination of the sputum. She rallied from this after a two months' trip in Europe, and returned with only a slight cough and expectoration. In January, 1902, she became worse again, went to southern California without benefit, and then to the Adirondacks. While there her cough and expectoration almost disappeared, but coincident with this change she developed a fever and returned to her home at the end of June, 1902, feeling worse. She came to Colorado Springs the following July.

I first examined her on July 15, 1902. Her height was 5 ft. 7 in., weight 119½ pounds, average normal weight 130 pounds. Temperature A.M., normal; P.M., 101° F., pulse 100, weak, respiration 22, some gastro-intestinal indigestion, sleeping poorly, very nervous, cough infrequent, moderate, but spasmodic. The expectoration was scanty, watery, with a little mucus and pus, containing many staphylococci and streptococci, but no tubercle bacilli. The chest expansion was barely 2 inches. There was a small area of consolidation in the right middle lobe, around the root of the lung, and over this area the sounds were conducted and without râles. There were a few scattered dry râles and semitubular breathing at the right apex above the second rib. The blood examination showed 3,672 red cells and 13,200 white cells, hemoglobin 68 per cent., no signs of malaria or typhoid. The temperature soon began to be above normal throughout the twenty-four hours, running up to 102° F. in the afternoon and evening, dropping to 100° F. in the morning. There was a slight chilliness and an inclination to sweat, with increasing loss of flesh and strength. Cough gradually became more frequent and irritable but there was no increase or change in the expectoration. Becoming rapidly worse, she was put to bed on August 13.

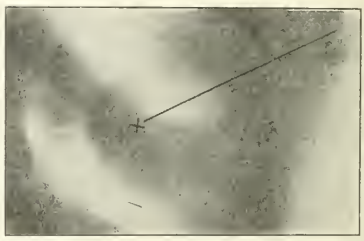
A second blood examination, made four weeks after the first, showed no leucocytes, no malaria, no Widal's reaction, an increase of red cells to 4,625,000 and hemoglobin to 75 per cent. The blood count and percentage of hemoglobin still remained, however, much below what is normal, after a month's residence at 6,000 feet elevation. Her temperature at this time ranged from the lowest point, which usually occurred at midnight, from 99⅗ to 103° F. the highest point, at 4 P.M., never dropping below normal in the whole twenty-four hours. From August 23 to September 2 it showed a marked rise, the highest point being reached on August 29, when at 6 P.M. it registered 104⅘° F. There were frequent examinations of the sputum made. On August 24 no tubercle bacilli were present, but on the following day tubercle bacilli in the number of 50 to 100 to each field were discovered, there being two or three groups of 10 or 12 bacilli to the field; the other tubercle bacilli lay scattered pretty regularly, some discrete, some forming V's, and some

1. W. B. Saunders & Co., page 202, 1903.
2. W. B. Saunders & Co., page 184, 1903.
3. Ibid.

end to end. They stained well and were beaded. On August 26 I commenced giving a saturated solution of iodide of potash, beginning with 5 drops three times a day, increasing one drop a day. On September 1, at 4 P.M., her temperature was 104° F. She then had a violent eruption of fetid purulent sputum, scarcely ceasing coughing for several hours. The odor was not that of gangrene, nor did the microscope show the characteristics of it or of a broken-down gumma, or of a pneumonic abscess.

After this occurrence the temperature began to drop, and from this time on the expectoration continued much freer than before the eruption. It always showed some tubercle bacilli. The cough was much less harassing and, as has been stated, the temperature fell so as to usually range between 99 and 101° F., and it continued to fall so that between about the last half of November and first half of December it was nearly normal. During this time the patient's general condition was much improved, particularly as regards her strength and digestion; she spent most of the day lying out of doors and the iodide of potash, which had been increased up to 40 drops a day, was changed for Nourry's iodine wine, 3 drams 3 times a day. Whenever the temperature rose, as it did several times afterward, and was always accompanied by a more or less complete cessation of cough and expectoration, the iodide of potash solution was again resorted to, 40 grains in twenty-four hours, the result invariably being that the expectoration and cough returned and the temperature dropped. On December 10 the temperature again began to rise, reaching 104.4° F. on the morning of December 14, when there was an especially violent eruption of purulent expectoration, 16 ounces in twenty-four hours. After the first eruption there was no odor to the sputum. The microscope revealed many tubercle bacilli in compact groups of 10 to 50 in each. These groups had the appearance of having been compressed and molded into shape, looking as if they must have been confined in a surrounding envelope though there was none then surrounding them. Other bacilli and cocci were absent, although many had been present up to the time of the first eruption, since which time they had gradually disappeared.

Macroscopical Appearance.—Sputum divides itself into three layers, the lower comprising about half the bulk; is rather clear, like saliva, with but few flakes. The second or middle layer consists of masses of tough, yellow muco-pus in separate masses, elongated, finger-like; the top layer, consisting of about one-eighth of the bulk, is of white froth. On January 8 specimen submitted showed at the bottom a fourth layer of muco-pus. Immediately after this eruption the temperature fell until January 18, when the sputum again became scanty and the temperature rose. There was then another similar eruption followed by a like drop in the temperature. Two weeks later the expectoration again became scanty, the high fever returned, and this was quickly followed by an eruption and then a fall of temperature. Since this time the expectoration has remained free and the temperature moderate. The number of bacilli has steadily decreased so that at present they average only 5 to a field. The character of the sputum is now more mucoid than purulent and has the blenorrheic character of a bronchiectasis. The amount averages 5 ounces in twenty-four hours, the proportion of the thick material steadily diminishing. The patient is gaining in weight and strength and now drives out and walks daily.



With respect to the physical signs, previous to the first eruption atalectasis developed in the right lower lobe. After the eruption there was a partial clearing of the consolidation in the middle lobe and more air began to enter into the lower. At the time of each eruption, large, coarse, moist râles of varying character were heard over this area. There were also transitory bronchial râles on the left side. During the intervals all râles generally disappeared, except that the tuberculous râles have been a little more noticeable at the right apex than at first. At no time was there any good

evidence of a cavity in any part of the chest. On March 3 an X-ray picture was taken of the back of the thorax and on March 13 a picture from the front was taken. You will see by the two skiagraphs that there is upon the right side what appears to be a dilated bronchus. It was over this region that the original dulness was noticed. This appearance shows in both pictures, taken front and back, and seemed very evident on direct inspection with the fluoroscope. In the front view the wrong side of the plate was accidentally applied so that the enlarged bronchus shows on the left instead of the right of the picture.

For the past three weeks the patient has been

daily inhaling the vapor of compound tincture of benzoin with equal parts of glycerin and alcohol, from a large, globe inhaler, the vaporization being effected by air compressed by water pressure so that a large volume of vapor is produced without fatigue to the patient, who uses it by deep inhalations for fifteen minutes, with frequent intervals of rest. The expectoration now shows a more rapid diminution of the thicker material and of the pus and bacilli, and the periods between the coughing and raising have become prolonged, especially since the inhaling has been practised.

In order to arrive at a diagnosis it is well to first reconsider the main points in the history of the case: We have a woman subject to frequent attacks of bronchitis. A period when there was a good deal of spasmodic coughing without expectoration and a general depression of health, but no fever. Then a continuous fever and not intermittent like hectic cough diminished, and still no expectoration; emaciation; general depression; gastro-intestinal indigestion, with no relief of the fever from treatment. Next a rapid increase in the temperature, with bacilli first appearing. Then came relief, with the administration of iodide of potash, which apparently effected its purpose by causing an absorption of lymph and a free escape of purulent tuberculous matter, which had evidently been compressed in some sac or tube. As a result a subsidence ensued of the high continuous fever and in its place an ordinary mild hectic, with free expectoration and moderate cough, interrupted, however, several times by a cessation of the cough and expectoration, followed by a return of the high, continuous fever and no relief until the iodide of potash was again freely given. Finally, a period of six weeks of almost steady improvement with free but slightly diminished cough and expectoration.

The local pulmonary signs indicated an old inactive tuberculous process at the right apex and solidification around the root of the right lung, with slight incomplete atalectasis of the right lower lobe. Up to the time of the first eruption the presumed tuberculous area at the right apex remained quiescent, but the consolidated area at the root and the atalectasis increased. Following the eruption these two conditions were both diminished, but at the extreme right apex there appeared some return of activity.

Neither Dr. W. H. Swan, who has seen the case several times, nor I could detect any evidence of a cavity, and the character of the expectoration negatives the idea of its presence, as also does the general behavior and the clinical picture of the patient. The local signs at one time suggested a broken down gumma, but the expectoration and other symptoms did not. The patient bore none of the stigmata of syphilis and the history was totally opposed to this diagnosis. Moreover, the iodide of potash could not be administered except in moderate doses without producing iodism, or only for a short time. There was no history of an acute pneumonia, which might have resulted in an abscess. Gangrene of the lung, of which I have seen several cases, and as it happens, two within the year, has various points of difference, especially in the odor and constituents of the sputum, though in the violence of the cough and the eruption there is a resemblance to this case.

My theory is that there had been in some indeterminate time in the patient's history, an acute tuberculous infiltration at the right apex resulting in an arrest by fibrosis; and also tuberculous infiltration of the bronchial glands, probably preceding the apical disease. That, commencing during the ill health which immediately preceded the patient's coming to Colorado, the tuberculous glands began to suppurate and press on the right bronchus above what may have been a previous dilatation thus causing a partial stenosis of the right bronchus. As regards the cause of the presumed dilatation, it might have commenced during the recurrent attacks of bronchitis, or it may have ensued in consequence of the pressure of the enlarged bronchial glands. As the glandular swelling increased there ensued complete occlusion of the tube; then ulceration from the glandular tumor into the enlarged bronchus, so that its contents poured in and tightly closed the dilatation, thus the contents were compressed. Probably this occurred at the time that the temperature ran up to over 104° F. and doubtless by affording a larger area for absorption of septic material was the cause of its doing so. I then commenced the administration of the iodide of potash with the result of producing sufficient absorption of the glandular tumor to relieve the stenosis, so that some of the contents of the enlarged bronchus escaped after violent coughing. However, it would seem as if until comparatively recently the stenosis was not entirely removed, but now it evidently is, because the sputum is very easily raised by the patient, particularly when lying down, and the character of the sputum and cough now resembles that of an ordinary case of bronchitis. At no time has there been marked emphysema or dyspnea, which facts are opposed to the theory of a bronchiectasis of long standing.

Reverting once more to the axiom stated by Hoffmann and quoted at the beginning of this article, viz., that as a fundamental principle it may be said that tuberculosis may occur as a complication of bronchiectasis, but that practically bronchiectasis of large areas never arises as a complication of tuberculosis. Nevertheless it is admitted by him that small bronchiectacic areas without special clinical importance are not infrequent, also that large areas sometimes occur in the tuberculous in cases in which there have been circumscribed processes in the apices and a tendency to recovery by subsequent fibrosis and only under such circumstances. This latter category is apparently the one into which this case falls, insofar as there was undoubtedly a previous tuberculosis at the right apex and in the bronchial glands, but that the bronchiectasis was caused, or, at least, brought into prominence, by the pressure of the swollen bronchial glands rather than by the fibroid changes of the lung tissue.

EARLY RECOGNITION OF IMPENDING OBSTETRIC ACCIDENTS.*

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In no department of medicine is there such an immense field for the prevention of disease and accident as there is in obstetrics.

Pregnancy, parturition and the puerperium form a distinct closed cycle interpolated in the normal current of the life of the woman. This cycle at the very beginning of its operation, acts as a stimulus whose effect is felt in every fiber and tissue of the woman's body. If the woman is healthy and the pregnancy healthy, the reactions in the general and local organs are normal. Failing either or both, the reactions are abnormal, and may manifest themselves in multifarious ways.

For example, pregnancy produces changes in the general metabolism, in the nervous system, in the blood and circulatory system, in the digestive organs, the respiratory tract, the kidneys, etc. A healthy woman will react normally to the stimulus and the changes will not disorder the patient's life, but if one or the other organ is not well, changes are produced which jeopardize the life or the health of the gravid woman. Should, owing to an unstable nervous system, a disturbance occur in the general metabolism, toxic by-products may be produced which cause toxemia, or even eclampsia. Should the heart prove unequal to the task imposed by pregnancy, discompensation results; have the kidneys been injured by a previous scarlatina, they may prove default under the added burden of pregnancy; if, as a child, the patient had rickets, a difficult labor is probable, and so on.

As far as the ovum is concerned, we may cite the abnormal implantation of the same, either outside the uterus or with the placenta previa, hemorrhagic diathesis if the parents had hemophilia or syphilis, etc.

These few examples will give some idea of the greatness of the possibilities of preventive treatment in obstetrics. They show, too, that the obstetrician must be a man of broad general medical attainments, of accurate medical habits and of acute power of observation so as to determine the existence of an anomaly before it has gained headway and become irremediable, or difficult of remedy.

It may be said with little fear of contradiction, that the pregnant woman in general practice is neglected. Few physicians examine the cases before labor to measure the pelvis, to see if heart, lungs, kidneys, etc., are normal, to see if the pregnancy is normal. Unless a patient gives a history of previous difficult labor, or has pronounced organic disease, she goes into labor with her condition unknown to her accoucheur. It is then too late to remedy the neglect, and as a result, many mothers and babes are lost, or crippled for life.

By a moderate amount of intelligent prevision, nearly all obstetric accidents may be prevented, or at least mitigated. The practitioner must determine early in pregnancy and throughout the period, if every organ of the woman is sound, and is carrying the strain of pregnancy well, and if the pregnancy is a normal one. Toward the end he must study the mechanical conditions regarding the size of the pelvis and the size and position of the child. The possibilities of post-partum hemorrhage, of puerperal sepsis, of rupture of the uterus, of ophthalmia neonatorum, are to be borne in mind. In order to prevent one from overlooking a symptom or a point in the anamnesis which would suggest the likelihood of any complication arising, it is advisable to write the patient's history on a special blank so designed as to elicit the facts bearing on the various possible complications. Such blanks may be found in obstetric text-books though most accoucheurs prefer to design their own. In filling out these blanks, the answers of the patient to the various questions will naturally suggest to the examiner the probability or improbability of the various obstetric complications.

Recognition of Impending Eclampsia.—Eclampsia and its allied conditions, uremia, and toxemia without convulsions, are fatal complications in pregnancy, but fortunately are almost always recognizable and preventable. Rarely, it must be allowed, eclampsia occurs like thunder from a clear sky. The real causes of eclampsia are still unknown. The theory of greatest plausibility is that the convulsions are due to a toxemia, this toxemia the result of abnormal metabolism or insufficient excretion, or both, either in the mother or in the child. Causes for abnormal metabolism may be sought in the nervous system or in heredity; causes of deficient excretion, in disease of the special vital organs, the liver, the blood-forming organs, or the kidneys. Examination with a view of preventing convulsions from these sources, will proceed along the lines indicated.

One must interrogate the family history. The mother may have been eclamptic or nephritic or rheumatic; there may be a history of mental disease, neurasthenia, or alcoholism in the parents. Then the personal history of the gravida; did she have any infectious disease leaving damaged kidneys, scarlatina, actual nephritis, or a deranged liver, jaundice, etc., or infantile convulsions? All these conditions indicate the possibility of eclampsia. Convulsions in a previous pregnancy do not render probable a repetition in the present, unless they were due to nephritis, and the latter condition continues. Thus a distinction must be drawn between uremic eclampsia and toxemic eclampsia, though clinically, and as far as the treatment is concerned they are identical.

As a routine practice, the urine of pregnant women should be systematically examined, but experience has shown me that we cannot rely on

* Read before the Chicago Medical Society, May 27, 1903.

either the positive or the negative evidence thus furnished. Even when the urine shows distinctly the existence of a nephritis, eclampsia is rare, and one interrupts the pregnancy more to prevent damage to the kidneys than to forestall convulsions. Nephritis may exist without urinary evidence, and the kidney of pregnancy may present the urinary findings of nephritis when the latter does not exist. Nevertheless, the presence of albumin and casts is the most reliable sign of threatening danger, and should always be the object of careful search during pregnancy.

Next in importance is the amount of urine passed daily, together with the specific gravity, *i.e.*, the daily amount of total solids excreted. Normally, the pregnant woman passes 60 ounces of urine a day, with a specific gravity of 1.014, giving her a normal excretion of solids. The patient may pass 30 ounces of urine with high specific gravity, and be well, or more urine with low specific gravity. When, however, the amount of urine is small and the specific gravity low, one must consider excretion deficient and take measures to increase it. One should therefore, instruct all pregnant women to measure the quantity of urine systematically, and report the amount regularly to the physician.

Of least importance, in the writer's experience, is the urea index. Cases may be cited where the gravida passed urine with less than one-tenth of one per cent. of urea for a week, and enjoyed perfect health. On the other hand, a colleague of the writer lost a patient from eclampsia who was passing 1 $^{6}/_{10}$ per cent. of urea two days before the attack.

The writer at present places most reliance on a careful study of the patient, as just described, and a watch for the *symptoms* of deficient excretion or of toxemia. Each pregnant woman is put on a plain, not overnitrogenous diet with plenty of water and milk. She is instructed to appear often during the pregnancy, to report at once if she has headache, nervousness, insomnia or somnolence, neuralgias, eye and ear symptoms, nausea and vomiting, swelling feet or eyelids, diminished excretion of urine, constipation, etc. In short, the general health of the patient is the object of continual solicitous regard. Should the patient at any time present such symptoms, or should the examination of the urine show deficient excretion, the case is carefully investigated and proper treatment instituted. A painstaking examination of the patient is made, not forgetting to study the pulse for increased arterial tension and the eye-ground for retinitis. It is not alone the examination of the urine, but the general condition of the patient and her family and personal history also that require watchful interrogation if we are to forestall the grave accident, eclampsia.

Recognition of the Puerperal Hemorrhages.—Of these only two will be considered—post-partum hemorrhage and placenta previa. Every pregnant woman should be fortified against post-partum hemorrhage, and the prevention should begin as soon as the patient engages her physician.

The family and personal histories are of significance. If the mother or the sisters of the patient, or the patient herself have had hemorrhage or atonia uteri at the time of labor, the physician should lay the fact away in his mind. If the patient had late menstruation, with or without chlorosis, irregular, painful, or profuse menses, or if there is a clearer history of endometritis, the possibility of an abnormal third stage is to be borne in mind. If there are gross pathological conditions present, as fibroids, adherent uterus (as from ventrofixations, etc.) deformed uterus, the need for prevision is self-evident. One must make inquiry in regard to the hemorrhagic diathesis—is the gravida a bleeder? The family history, profuse menses, severe bleeding from slight injuries, pains in the joints, extreme exhaustion and dyspnea on slight exertion, point to this diagnosis. One must also consider the possibility of acquired hemophilia and search for malaria and syphilis, which, in the writer's experience, may cause the same. It would perhaps be impracticable to always examine the blood and determine its coagulation time, but in cases where there are evidences of blood dyscrasia, this should be done.

During labor itself, if the uterus is atonic in the first two stages, it is more than likely to so continue in the third. This is also true of an overtired uterus, or one that has been overdistended. It is worthy of repetition to say, that a history of hemorrhage in a previous labor is a strict warning to prepare far in advance for the present labor. One should remember that chloroform predisposes to post-partum hemorrhage; the same is said of quinine and high altitudes.

Regarding placenta previa, the writer has only this to say: If a woman has endometritis, and especially if the same has caused some puerperal anomaly before, look for placenta previa. Further, if a patient has even a tiny show of blood after the fifth month, keep the possibility of placenta previa plainly in mind, and place the woman in a hospital where the watching may be constant and medical attention prompt. The writer cannot recommend this advice too strongly.

Recognition of Contracted Pelves.—Contracted pelvis is rare in the American-born white, and but little commoner in the black. In general, in the United States, the statistics show 1.5 to 13 per cent. contracted pelves. In the foreign-born population, one meets pelvic deformity oftener. The higher grades of contraction are surely very rare, but a slight narrowing, sufficient to make some irregularity in the labor, is not uncommon. If to this is added the factor of a large child with a hard unmoldable head, severe dystocia may result.

The routine examination, then, of the pregnant woman, having in view the prevention of mechanical disturbances at the labor, should go along two paths—first, the size, shape and inclination of the pelvis, and second, the size and development of the child.

The history of the patient is valuable. Did the woman have rickets when a child? How old was

she when she first walked? If late in walking, or, if there is a distinct history of rickets, the pelvis must be measured with more than usual care. Some flattening will almost always be found. Was she a bottle baby, and weak and puny as an infant? If so, look for a generally contracted pelvis. Was she a premature infant? Look for general contraction, or perhaps hip dislocation. Did she have chlorosis at puberty, and was menstruation late and irregular? Did she conceive late in married life? If so, perhaps she has an infantile uterus and its frequent accompaniment, a generally contracted pelvis. Has there ever been an injury to the pelvis, or joint disease? Has the patient scoliosis?

Pelvic mensuration comprises an examination of the whole bony skeleton for evidence of rickets, osteomalacia, or other distortion.

The external pelvic measurements are totally unreliable as indices of the size of the pelvic cavity. This last must be carefully palpated and measured. If the accoucheur makes it part of his routine examination to palpate and estimate the size of each pelvis in his obstetric and gynecologic practice, he will acquire easy facility in recognizing any diminution or distortion. While the conjugata vera is the most important measurement to obtain, the transverse diameter of the inlet is often necessary for a complete diagnosis. The writer has devised a way that is simple and accurate. The second and third fingers of the right hand are doubled into the palm and held by the thumb while the index and little fingers are firmly extended. The hand is now forced down over the inlet so that the two fingers last mentioned rest on the linea innominata. The left hand is used for internal examination, and from within, the fact that one finger rests on each side of the pelvis is determined. The right hand is removed, holding the fingers firmly in the position they attained, and the distance between the tips is the transverse diameter of the pelvis. Or the pelvimeter may measure the fingers directly, as they rest on the brim. The writer has met not a few instances of narrow pelvic outlet. This contraction will explain a goodly number of cases of delay at the inferior strait. He, therefore, takes the bi-ischiatic diameter as a routine practice, and also the distance between the spines of the ischia, using Ayer's outlet pelvimeter for the purpose.

In multiparæ, the history of previous confinements is of great value. If the labors have been normal, the conditions are probably right, but previous operative deliveries may not have been indicated. Careful discernment is here advisable.

As far as the child is concerned, we can get more information than was formerly considered possible. If the parents are tall and large, the infant is likely to be large. If either has a pronouncedly large and square head, it is likely to be duplicated in the infant. The writer has found this especially true of the mother. The woman may have a history of large children.

Then too, we now have fairly accurate means of measuring the child. Toward the end of pregnancy the patient should be examined. The child should be carefully palpated and a mental picture formed of its size. Then its head measurements should be taken. This is done with an ordinary pelvimeter, or with a special cephalometer. That of Perret is excellent. It is possible with this instrument to obtain surprisingly accurate results, as is proven by measurements taken when the child is delivered. The hardness of the infant's head can only be estimated on internal examination, and best when labor is begun.

Should there be any doubt about the child being able to pass through the pelvis, the patient should be examined each week. At these examinations the head should be forced down on the inlet, and with the fingers in the vagina and the hand outside, the relation of one to the other decisively determined. A woman with a pelvis slightly contracted should not be allowed to go overtime. If one discovers a contracted pelvis during pregnancy, the opportunity of inducing labor is given, or, if the patient goes to term, she may be placed in a hospital and proper preparations made for a complicated labor. Many infants will thus be saved, and many maternal deaths and much invalidism be prevented.

Recognition of Malpresentation.—It is the writer's custom to visit each woman shortly before her labor, to determine by external examination the position of the child, the engagement of the head, the presence of twins, etc. When the labor begins the conditions are known, which is a matter of real comfort. At the same time too, an abnormal presentation might be corrected.

Recognition of Puerperal Infections.—To foresee a puerperal infection is not always easy or practicable. There is no doubt that in rare instances a woman goes into labor with a focus of infection in more or less direct connection with the genitals. This may be an appendicitis abscess, a pus tube, or even an infected uterine cavity. It is hardly probable that a woman can carry an infection of the uterus throughout pregnancy; but that a salpingitis may be so carried, and infection of the peritoneum occur during delivery, has been proven to the writer by actual experience. Extraneous infections, *e.g.*, suppurating ears, a glass eye in a suppurating sac, grip, enterocolitis, cystitis, etc., all make us fearful of sepsis. Unfortunately a bacteriological examination of the vaginal discharge will not give us the needed information. The findings are equivocal. The virulent streptococcus can exist in the vagina as a harmless saprophyte. Many cases run an afebrile course where, judging from a profuse and foul discharge with a granular vagina, one would expect a sepsis; and others with opposite conditions, present some fever. In such cases a history of fever in a previous confinement, suggests the possibility of a repetition in the present one. If the patient has gonorrhea, or if the infant develops ophthalmia, or if there is known gonorrhea in the husband, a late fever in the puerperium may be anticipated, though it is not certain. If the delivery was attended with severe injury to the gen-

ital tract, if the puerpera is anemic from blood loss or of low vitality from systemic disease, as typhoid, pneumonia, septic complications may be expected. Finally, if the accoucheur has been handling pus cases or other infections, or if extreme surgical asepsis in the conduct of his obstetric work is not practised, he may expect puerperal infection.

Recognition of Ophthalmia Neonatorum.—The use of Credé's method of nitrate of silver for the prevention of ophthalmia neonatorum is well known and should be generally practised. Nothing has permanently succeeded it. One may, by close questioning discover evidence of gonorrheal infection in either or both parents, and thus redouble precautions when the child is born and after. If a previous child had sore eyes, this one may be similarly affected. A granular vaginitis is often gonorrheal, and should be cured before labor.

THE CHILD.

There is a field in obstetrics which the light of investigation has hardly penetrated, that is antenatal pathology. About 5 per cent. of children are stillborn, and 1.5 per cent. die a few hours after labor. No doubt a part of these deaths is due to errors of art; and there is a certain proportion of cases where the child dies in the latter months of pregnancy. Syphilis, endometritis, and chronic nephritis are recognized as being the basal factors of some of these deaths, but there is still an unexplained contingent. Ballantyne has done some work in this field, but as yet the practical results have been meager. In one case where successive children had shown the hemorrhagic diathesis, proper treatment given the mother during gestation, forestalled the accident.

Many children suffer from the effects of disease in the parents; beside the gross lesions of syphilis, alcoholism, rheumatism, tuberculosis, neuroses, all may affect the fetus more or less deeply. Visible deformity, congenital weakness, premature interruption of the pregnancy, even non-viability of the child may often be traced back to one or other of these vices in the parentage. This is an extensive and very alluring field—more alluring, because it presents such difficulties. Ballantyne wishes the subject of antenatal pathology, diagnosis and treatment made more the object of our study. The writer regrets the limits of this paper preclude more than these brief references.

During labor, much can be done to anticipate impending danger to the fetus. Should the case be one of eclampsia, placenta previa or other obstetric complication, or a medical complication as typhoid, pneumonia, pulmonary edema, the need for watching the baby is self-evident.

In all cases, however, it is the duty of the accoucheur to ascertain the condition of the child, and to keep himself informed as the labor progresses. The fetal heart tones give the most reliable evidence, and much can be learned by studying their frequency, rhythm and quality. Toward the end of labor, the watchfulness should be redoubled, because here the danger of premature separation of the placenta arises, and also exhaustion of the infant.

The conduct of the physician, therefore, during pregnancy and labor is not one of mere waiting for something to demand his interference, but should be one of armed watchfulness to foresee, far in advance, impending accidents.

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THIOCOL IN THE TREATMENT OF CROUPOUS PNEUMONIA.*

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THE composition of thiocol (potassium guaiacol-sulphonate Roche) is shown by the formula C_6H_3. OH. OCH_3. SO_3K. It occurs as a white, microcrystalline, odorless powder, having a faint bitter-saline taste. It is readily soluble in water, and dissolves also in diluted alcohol, but it is insoluble in ether or in fatty oils.

Having used creosote, guaiacol and similar remedies extensively in the treatment of pulmonary tuberculosis, I was at once impressed with the value of thiocol, when I was assured by the manufacturers, who have a world-wide reputation for skill and integrity, that it would yield for absorption when taken into the alimentary canal, 70 per cent. of guaiacol and that it might be given in large doses without disturbing the stomach. I immediately began its use with tuberculous patients and quickly found that if given at first in a dose of 5 grains after eating, the dose might be rapidly made 2½ grains to 5 larger each succeeding day until the patient could soon take 25 to 35 grains or more, after each meal, without any disturbance of the digestive organs.

Carbolic acid and creosote have been so highly lauded in the treatment of pneumonia that it seemed to me injudicious to try the effects of thiocol in this disease, because it yields such a large percentage of guaiacol and because it is easy to take and does not disturb the digestive organs. I believe that we may safely assume that if sodium salicylate, carbolic acid, creosote and guaiacol are useful, as has been claimed in the specific treatment of croupous pneumonia, then thiocol also should be beneficial to even a greater degree; but if the latter is not beneficial then it is probable that the claims made for the other remedies of this class are fallacious.

With the aid of the Senior Interne, Dr. T. W. Stumm, who was in charge of the ward and who recorded most of these cases, and through the courtesy of another Senior Interne, Dr. C. M. Echols, who made the observations on two or three other cases, we have given the remedy a trial in 22 consecutive cases, taking them as they came without any selection, excepting that thiocol was not given to those who were moribund on admission. In six very severe cases, and in six milder cases recovery occurred but whether influenced by the drug or not, we cannot say. In two cases, III and VI, which were very severe, re-

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covery occurred and we felt encouraged, but a careful study of the symptoms did not enable us to trace any definite relation to the administration of the remedy. Of course, the number of cases in which we have used the remedy is too small to serve as a basis for conclusions, but the reports are strictly impartial and when added to other similarly recorded observations, they will be of value in determining whether remedies of this class are of any service in treating croupous pneumonia.

This study is necessarily imperfect because I did not feel justified in omitting the ordinary treatment employed for this class of cases in this hospital, and, therefore, all of these cases received more or less strychnine, whisky, carbonate of ammonia and anodynes, as indications suggested. They were, however, in other respects than the thiocol, treated in practically the same way as the cases recorded in a paper that I read last June, in which I showed that out of between three and four hundred patients with croupous pneumonia, treated during the preceding fifteen months (who were in every other way under similar conditions), the death rate was 36 per cent. In this series of 22, the mortality has been 45.8 per cent., showing the necessity of analyzing many more cases before forming a conclusion, for of the 10 fatal cases 8 were alcoholics or had serious complications which would necessarily make their chances small; while, on the other hand, the uncomplicated cases under forty-five years of age, all recovered. I have grouped the cases into 3 classes: (1) All cases in temperate persons who were less than forty-five years of age; a class in which the prognosis is usually favorable. (2) All temperate patients over forty-five years of age; a class in which even without complicating disease, the prognosis is generally unfavorable. (3) Alcoholics and other patients in whom there were serious complicating disease; a class in which the prognosis is almost without exception extremely unfavorable.

I have studied carefully in each case the physical conditions, the daily dosage and the duration of treatment, and I have endeavored impartially to estimate the effects, if any, of the remedy as shown by the pulse, temperature and respiration and the physical signs. In this study I have also availed myself of the independent judgment of Dr. E. L. Kenyon, who has analyzed the records of every case with great care. This analysis appears to show that the thiocol did not disturb the digestive organs in any way or cause any unfavorable symptoms in doses as high as 120 grains daily. In Class I, all of the 7 cases recovered, but in none of the cases could the changes be safely attributed to the remedies taken. It will be noted, however, that practically all of these cases terminated by lysis, which was similar to the result reported by Robert Liegel (*Wiener medizinische Wochenschrift*, May, 1898), who reported 72 cases of pneumonia treated with 120 grains daily of sodium salicylate without a death. The records briefly, are as follows:

CLASS I.—TEMPERATE UNCOMPLICATED CASES UNDER FORTY-FIVE YEARS OF AGE.

There were 7 of these cases, all of which recovered.

Case I.—A laborer, forty years of age, had only the upper lobe of one lung involved. He did not receive any thiocol until the ninth day of the disease, on which he had 25 grains. This day his pulse ranged from 90 to 120, temperature 102 to 104.2° F. and respiration 44 to 66. The next day he received 75 grains of thiocol and for the four succeeding days, 120 grains each day. The disease terminated by lysis, but there was no evidence that it was modified in any way by the drug.

Case II.—Laborer, aged forty-two years. Habits irregular, but not really intemperate. Large and robust. Lower lobe of right lung only involved. Twenty-five grains of thiocol were given the fourth day of the disease when the temperature ran 101 to 104.2° F., pulse 80 to 100, respiration 28 to 32. The next (fifth) day he received 70 grains of thiocol. The temperature averaged about a degree lower but the pulse and respiration were practically the same. The sixth day he received 100 grains, the seventh and eighth days each 120 grains, during which time the temperature, pulse and respiration gradually grew less, and they became practically normal on the ninth day. In this case vomiting occurred several times after taking whisky and a full dose of thiocol but it did not appear due to the latter.

Case III.—Scholar, aged fourteen years. Involvement of the lower half of the right lung. This patient had been in the hospial 4½ weeks with typhoid fever when he was taken down with croupous pneumonia. On the second day of the disease, the temperature was 102 to 105.2° F., pulse 108 to 120, respiration 30 to 48. He was given 10 grains of thiocol. The third day the temperature was 102 to 104° F., pulse 108 to 128, respiration 32 to 38, thiocol, 55 grains; fourth day, temperature 97.4 to 104.2° F., pulse 100 to 128, respiration 124 to 132; fifth and sixth days the highest temperature was 103.4° F., highest pulse 136, highest respiration 132; 85 grains of thiocol given each day; seventh day, temperature 97.8 to 101.4° F., pulse 96 to 120, respiration 28 to 32, thiocol discontinued at that time. The boy had been vomiting for a couple of days and this continued for two days afterward, but it appeared to result from heroin or whisky. The vomiting did not occur after the ninth day and he made an uninterrupted recovery.

Case IV.—Clerk, aged twenty-one years. Both lower lobes involved when admitted to hospital on fifth day of disease. On the sixth day, temperature 102 to 103.8° F., pulse 94 to 112, respiration 24 to 40. Gave only 10 grains of thiocol; seventh day temperature 99 to 102.2° F., pulse 76 to 98, respiration 28 to 40, thiocol 70 grains; eighth day, temperature 98.4 to 101° F., pulse 66 to 80, respiration 22 to 30, thiocol 110 grains; ninth to sixteenth days, temperature and other symptoms

gradually subsided. During this time he took 120 grains thiocol daily, but without apparent effect.

Case V.—Electrician, thirty-six years of age, temperate. Lower lobe of right lung only involved. On the eighth day of the disease, temperature 99 to 103° F., pulse 100 to 112, respiration 24 to 28. On the ninth day, temperature 100.4 to 102.2° F., pulse 96 to 116, respiration 24. Thiocol 70 grains. On the tenth day 110 grains thiocol, eleventh day, 120 grains, by which time temperature had subsided to normal; remedy continued three days longer. Marked improvement (lysis) during the first three days the remedy was being administered, but it was at the time when the disease should naturally have terminated spontaneously so that the effects cannot be ascribed to the medicine.

Case VI.—Laborer, thirty-three years of age: four-fifths of left and a small part of right lung involved, thiocol 40 grains given on seventh day when temperature was 102 to 103° F., pulse 108 to 120 and respiration 24 to 40. The next day temperature was two degrees lower but pulse higher, respiration the same, thiocol 75 grains. Next day (ninth) same amount of thiocol, temperature same but pulse and respiration much lower. Temperature continued from one to two degrees above normal with pulse 72 to 96 and respiration 20 to 24 for the next ten days, during which the thiocol was continued in doses of 40 grains daily. A slow recovery. No apparent effect from remedy.

Case VII.—Waiter, aged thirty-two years. Upper right lobe only involved. On the fifth day of the disease, thiocol 25 grains were given, the record showing temperature 102 to 104.6° F., pulse 110 to 120, respiration 26 to 40. Next (sixth) day very slight improvement, thiocol 60 grains; next (seventh) day, thiocol 110 grains, temperature 101.2 to 101.8° F., thiocol 120 grains given each of the next four days, during which symptoms became normal. Effects of remedy doubtful, as the disease should normally have terminated in the same way.

CLASS II.—TEMPERATE PERSONS OVER FORTY-FIVE YEARS OF AGE.

There were three patients in this class, the first, just forty-five years of age, recovered, the others died.

Case VIII.—Laborer, just forty-five years of age: right upper and left lower lobes involved. Thiocol given first on tenth day (day of crisis). On the eleventh day, 50 grains of thiocol, twelfth, thirteenth and fourteenth days each 120 grains; steady improvement, but not apparently modified by drug.

Case IX.—Decorator, aged forty-eight years. Lower right lobe involved. On ninth day of disease, temperature 100.6 to 102° F., pulse 104 to 112, respiration 32 to 36. Thiocol 40 grains during the day. The following day thiocol 110 grains and afterward thiocol 120 grains daily until the fourteenth day. Temperature, pulse and respiration dropped gradually to nearly normal on the fifteenth day, but the patient was delirious after the eleventh day. On the sixteenth day the temperature was normal, pulse 96 to 100, respiration 28, but weak. Death—cause uncertain.

Case X.—Salesman, aged fifty-four years. Whole right lung involved, thiocol not given until seventh day. Death came on the evening of the eighth day. No effect from the remedy.

CLASS III.—ALCOHOLICS AND OTHER CASES WITH SEVERE COMPLICATIONS.

There were twelve of these, eight or 66⅔ per cent. of whom died.

Case XI.—Laborer, aged thirty-one years; alcoholic. Upper lobe of right and a small part of lower left lobe involved. On seventh day, temperature 102 to 105° F., pulse 92 to 132, respiration 28 to 34. Gave thiocol 25 grains; eighth day 75 grains; ninth day 110 grains; tenth day, crisis; tenth and eleventh days thiocol 120 grains each day. An uninterrupted recovery without sensible modification of symptoms by medicine.

Case XII.—Machinist aged twenty-eight years, heavy drinker. Upper half of left lung involved. Thiocol given after eleventh day, 110 grains each day until the fifteenth day. The symptoms steadily improved after the ninth day. No perceptible effect from the medicine.

Case XIII.—Laborer, aged forty-eight; alcoholic. Upper part of lower lobe of right lung and a small spot in lower lobe of left involved. On the eighth day of the disease, patient received the first thiocol, 20 grains. Temperature 99 to 103° F., pulse 96 to 124, respiration 24 to 32. Slightly better the next day; tenth day about the same. Thiocol 110 grains. On eleventh day, temperature 98.6 to 104° F., pulse 92 to 104, respiration 36 to 40, thiocol 120 grains. On twelfth day temperature normal, thiocol continued in the same dose for five days. Uninterrupted recovery.

Case XIV.—Laborer, aged thirty-two years, alcoholic. Entire left lung involved. On fourth day, temperature reached 104° F., one dose 5 grains of thiocol was given; fifth day temperature 101.4 to 102.4° F., pulse 112 to 140, respiration 32 to 38, thiocol 50 grains; sixth day worse; thiocol 100 grains; seventh day, temperature 101.8 to 103.6° F., pulse 140 to 160, respiration 36 to 52, thiocol 110 grains. Crisis eighth or ninth day. Thiocol same daily dose to twenty-second day. Uninterrupted recovery.

Cases 15, 16, 17, 18, 19, 20, 21 and 22, were all alcoholics; five of them less than forty-five years of age and three older than this. In Case XV the whole left lung was involved, the temperature was not high; the pulse for the two days he was taking the thiocol ranged from 108 to 148, respiration 30 to 44, death on eighth day of disease.

Case XVI.—Laborer, aged thirty-nine years; alcoholic and complicated with pericarditis. Lower lobe of right lung involved. Thiocol given fourth and fifth days of disease; died the sixth day. In both of the foregoing about 1,000 c.c.

of blood were drawn from the arm within twenty hours before death. Thiocol had no effect.

Case XVII.—Boxmaker, aged forty years; alcoholic. About two-thirds of right lung involved. Heart slightly enlarged and muscle weak, temperature never higher than 103° F. and until the day of death, pulse did not exceed 106 or respiration exceed 40. Thiocol given for five days, 35 to 120 grains daily. Death ninth day of disease.

Case XVIII.—Laborer, aged thirty-eight years; alcoholic. Inflammation involving mainly the middle third of right lung (mostly middle lobe); on second to fifth days temperature was 102 to 106° F., pulse 100 to 160, respiration 24 to 36, thiocol 20 to 120 grains daily; no effect. Death sixth day.

Case XIX.—Jockey, aged forty-two years; alcoholic. Lower half of right lung involved. Thiocol 25 to 120 grains daily from fifth to tenth days; temperature 101.8 to 105.4° F., pulse 110 to 140, respiration 24 to 64. Death on tenth day. No apparent effect from medication.

Case XX.—Peddler, aged forty-eight years; alcoholic. Small area involved in middle portion of right lung. Thiocol given seventh and eighth days in medium doses. Died ninth day, without apparent effect from medicine.

Case XXI.—Laborer, aged fifty-one years; alcoholic. Lower lobe of right lung involved. Thiocol given in uncertain doses fifth and sixth days. Died sixth day. No effect from medicine.

Case XXII.—Laborer, aged fifty-seven; alcoholic. Asthmatic and some hepatic trouble. Heart's action feeble from the first. Thiocol given sixth and seventh days, 60 to 75 grains. Died seventh day. No effect from medicine.

This report demonstrates that thiocol may be given to pneumonic patients in large doses without disturbance of the digestive organs, and without apparent harm. In no instance could we observe that it affected the temperature, pulse, respiration or physical signs, because in these cases where these factors indicated improvement, the natural course of the disease would have been expected to cause a similar change. We always began with moderate doses and it took three or four days to reach the maximum dose of 120 grains. Possibly different effects might have been noticed if the maximum dose had been attained within twenty-four hours. In future trials I would suggest that 5 grains be given as the initial dose and that the amount be rapidly increased until 30 grains are given at each dose, providing that it causes no unpleasant symptoms. In a disease running such a rapid course as pneumonia, quick action must be obtained if a remedy is to do much good.

Proposed Reduction of Alcohol Tax.—The Retail Druggists' Association, at a recent meeting in Washington, adopted a resolution in favor of reducing the tax on grain alcohol to 70 cents a gallon, and favoring the admission of imported alcohol for use in the arts free of duty.

PATHOLOGY AND PROPHYLACTIC TREATMENT OF PUERPERAL SEPSIS.

BY J. CLIFTON EDGAR, M.D.,
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A. PATHOLOGY OF PUERPERAL SEPSIS.

In the very short time allotted to this division of the subject, I am unable to do more than refer to the more common pathological changes and the principles in the prophylactic treatment. I am accustomed, from the pathological standpoint, to consider the following varieties of puerperal sepsis:

I.—Vulvitis and vaginitis.
II.—Endometritis (1) septic endometritis; (2) putrid endometritis or sapremia; (3) endometritis from mixed infection.
III.—Metritis.
IV.—Salpingitis.
V.—Oophoritis.
VI.—Acute sepsis or septicæmia lymphatica.
VII.—Septic phlebitis or septicemia venosa (1) uterine and para-uterine phlebitis; (2) puerperal pyemia or metastatic pyemia; (3) puerperal septic pneumonia; (4) puerperal ulcerative endocarditis; (5) puerperal arthritis; (6) femoral phlebitis or phlegmasia alba dolens.
VIII.—Pelvic cellulitis or parametritis.
IX.—Pelvic peritonitis or perimetritis.
X.—General peritonitis.
XI.—Urethritis cystitis, ureteritis, pyelitis.
XII.—Proctitis.
XIII.—Mastitis.
XIV.—Puerperal septic erythema.
XV.—Puerperal pemphigus.
XVI.—Puerperal tetanus.
XVII.—Puerperal neuritis.
XVIII.—Auto-infection.
XIX.—Gonorrheal infection.

Septic inflammation of the vulval and vaginal mucosa may occur with or without a co-existing endometritis. Here we find infection either superficial or catarrhal and ulcerative, starting usually in some traumatism of the part with or without the formation of the so-called puerperal ulcer, or the grayish-yellow coating of necrosed tissue to which the term diphtheroid has been applied.

Endometritis is the most common lesion in cases of puerperal infection, which, indeed, usually begins as an endometritis either putrid or septic. It is possible, however, for the endometritis to occur from the extension of a vaginitis or of a phlebitic or lymphangitic metritis. We recognize two principal varieties of endometritis, septic and putrid, and allude to a third variety, mixed infection, with regard to which there is still much to be learned.

Septic Endometritis like vaginitis, may be either superficial or ulcerative. The most common condition is a catarrhal endometritis. It is ordinarily limited to the placental site by a zone of cellular infiltration by which the further progress of the infectious germs is prevented. When it becomes general, there is necrosis of the entire endometrium and the development of an ulcera-

tive process. There is a profuse secretion, purulent, and more or less mixed with blood. In mild cases this secretion has usually little or no odor. When, however, the colon bacillus is present, and in putrid endometritis, it is markedly fetid. In some cases the endometrium is only involved in patches here and there, while in others, not only is the whole endometrium destroyed, but the cervical mucous membrane is largely involved. It is most likely to become localized at the placental site, about the internal os, and about the seat of cervical lacerations.

Putrid Endometritis or Sapremia is the endometritis or sapremia caused by the entrance of the saprophytes or putrefactive germs. Recent researches especially those of Bumm, have shown very interesting and important differences between putrid endometritis and endometritis due to mild pyogenic infection, on the one hand, and the same condition when due to virulent pyogenic infection. In both cases the endometrium is the seat of a necrotic process and contains countless micro-organisms, but in the first class of cases there is formed, by a process of cellular infiltration, a protective layer which prevents their further progress. In the severe forms of pyogenic infection the protective zone is not present or not sufficiently developed to form a barrier to the progress of the germs. In putrid endometritis the endometrium is bathed with an ill-smelling, frothy secretion.

Endometritis from Mixed Infection.—Recent investigations tend to show that pure sapremia is not as common as was formerly supposed, and that in many cases pyogenic and sapremic infection co-exist. It is also an undoubted fact that the presence of a focus of putrid absorption in the uterus predisposes to the development of true septic infection. In these cases both putrefactive and pyogenic germs will be found, and the type of the pathological condition will be a mixture of those already described. It is also possible that one of the specific micro-organisms, *e.g.*, the tetanus, the typhoid, or the diphtheria bacillus, may gain access to the uterus and further complicate the condition.

As already noted in endometritis, the usual type of septic infection does not always remain limited to the uterine cavity, but may extend to the body of the uterus, to adjacent structures or organs, or into the general circulation. This occurs when the infection is of a virulent character, when the resisting power of the system is weakened, or when the granulation wall is broken down or disturbed; *e. g.*, by the unwise use of the curette or even of the douche tube. The further history of the case, then, will depend upon the course taken by the bacteria. Thus a metritis, salpingitis, oophoritis may result from the infection.

The lymphatics may take up the infection, giving us acute sepsis or septicemia lymphatica; or one of the six varieties of septic phlebitis or septicemia venosa may occur, as (1) uterine or para-uterine, (2) metastatic pyemia, (3) septic pneumonia, (4) endocarditis, (5) arthritis, (6) femoral phlebitis.

Likewise any of the eleven remaining varieties of infection already mentioned. The course of the infection from the uterine mucosa is shown in these diagrams, the blue color indicating the septic agents. Any or all of these nineteen varieties of puerperal sepsis, and their numerous subvarieties and combinations may present varied and extensive gross pathological changes; still the fact remains that in a very large proportion of cases an autopsy presents no macroscopical evidences of sepsis.

I will refer to two cases only to illustrate the two opposite conditions:

The first case is one upon whom I performed Cæsarean section at the New York Maternity in 1895, for a generally contracted pelvis. The patient was syphilitic with mucous patches on the vulva and the vagina. Death occurred on the twelfth day post-partum from acute streptococcus infection and septicemia lymphatica. There were no macroscopical evidences of sepsis; no peritonitis, no pus in the tubes, and the appearance of the endometrium was normal.

The second example is from a specimen in the Pathological Laboratory of Cornell University Medical College, and illustrates the fact that the septic processes may leave the uterus comparatively unaffected and expend their virulence upon other portions of the body. In this case death occurred on the thirteenth ray post-partum after a full term delivery from general purulent peritonitis and exhaustion. The patient was at first treated on the basis of a diagnosis of acute malarial infection. No local treatment was at any time used. The section through the wall of the uterus shows streptococcus endometritis and extension of the infection through the lymphatics to the peritoneum, causing death. A very moderate exudative endometritis is present. The uterine muscle is almost normal in appearance.

I have selected these two cases for the reason that they represent two opposite conditions. In the first there was an absence of appreciable lesions of puerperal sepsis, and although hysterectomy was proposed in the early part of the disease, it was abandoned, and autopsy showed that it probably would have been without avail.

In the second case, on the other hand, a general purulent peritonitis resulted from the septic endometritis, and hysterectomy early in the course of the infection might have been successsful.

B. PREVENTIVE TREATMENT OF PUERPERAL SEPSIS.

It cannot be too often repeated that when the management of normal labor is regarded as very largely identical with the preventive treatment of puerperal infection, the latter will be of the rarest occurrence. I would sum up the preventive treatment of puerperal sepsis under four heads: (1) General hygienic measures; (2) asepsis of patient, physician and accessories; (3)

limitation of internal examinations and manipulations; (4) antistreptococcic serum.

1. *Hygienic Measures.*—Good blood is the best of germicides, hence the importance of good hygiene during pregnancy; an out-of-door life, good diet, freedom as far as possible from sources of worry and care. The correction of anemia by iron and other tonics, the treatment of any constitutional dyscrasia should not be considered too laborious to prepare the patient against the inroads of septic infection. Under the same heading come certain precautions already discussed elsewhere; *e.g.*, the selection of a sunny and commodious lying-in chamber, as far as possible removed from toilets, sinks and plumbing, and securing good ventilation. All these precautions should be regarded as important because they prepare the patient to resist infecting agents; but it should not be forgotten that all the agents thus combated do not of themselves act as the immediate cause of infection. Nor should the physician forget, in his attention to such details, that the actual cause of puerperal infection is contact of wounds in the birth canal with an infected agent.

2. *Asepsis of Patient, Physician and Accessories. The patient.*—The traditional ante-partum tub-bath calls for severe criticism from the standpoint of asepsis (Sticher,* *Centralblatt f. Gynäkologie*, March 2, 1901; and Strogan, *Centralblatt f. Gynäkologie*, Feb. 9, 1901). Not only is the parturient woman at the end of such a bath immersed in a dilution of her own dirt, but, as has been shown experimentally, the infected water often enters the vagina of both primiparæ and multiparæ. Moreover, under such conditions the danger of nipple infection is always present. The ideal ante-partum bath would be for the patient to stand or sit under a running stream of boiled water, thus eliminating another possible source of septic infection of the parturient woman. When a shower of boiled water is not available, I instruct the nurse to place the patient in a bath-tub and pour several gallons of boiled water, allowed to cool to the proper temperature, over the shoulders of the patient, the patient at the same time being instructed to thoroughly scrub the external genitals and body generally with a coarse, clean wash-cloth and green soap, the nurse using the soap on the back and shoulders. All soap is finally washed off and the bath completed with several quarts of sublimate solution (1:5,000). The patient's external genitals are finally thoroughly cleansed by the nurse with absorbent cotton and a 1:2,000 solution of sublimate. The surface of the body is now dried with brisk friction. A sterile vulval pad as a temporary occlusion dressing is then applied and pinned to a waist-band made from a clean gauze bandage. If a bath-tub is not available, the following procedure is recommended: (1) Have the patient take a sponge-bath of hot water and soap; instead of using a sponge use a clean wash-cloth. (2) The nurse is instructed to cut the pubic hair short, if it is long or thick, with scissors. (3) The nurse now, with a soft hand-brush or absorbent cotton, scrubs with soap and hot water the external genitals, pubes and inner sides of the thighs, and cleanses the vulval canal from above downward with absorbent cotton and soap and water. (4) The parts are now rinsed off with clean water. (5) The same parts are then given a final cleansing with absorbent cotton and 1:2,000 sublimate solution, always toward the anus, care being taken to include the vulval canal with the sublimate solution. A sterile vulval pad or gauze is now applied to the external genitals as a temporary occlusion dressing and fastened by a T-bandage. In every method of cleansing the vulval canal and external genitals the greatest care must be used to avoid the production of erosions by stiff brushes or rough handling, as these may subsequently become infected.

Because the vaginal secretion of pregnant women does not normally contain pyogenic cocci, the douching of the vagina with antiseptics without a positive indication is unnecessary, and increases the risk of infection. Moreover, douching under such circumstances is merely the substituting of an artificial germicide for one of nature—sublimate solution for the germicidal vaginal mucus.

The Physician.—A physician who is dressing suppurating wounds, attending cases of erysipelas, scarlet fever, diphtheria, or other cases of infectious or contagious diseases, should not attend obstetric cases if he can help it. If he is obliged to do so, he should take a full bath, change his clothing, disinfect his hands and arms with special care, and make no internal examinations that are not imperatively necessary, and only with his hands encased in sterile rubber gloves. It is needless to say that any man who practises obstetrics should himself be free from infectious or contagious diseases; *e.g.*, that he should be cleanly as to his habits should bathe frequently, should wear clean clothing, should keep his nails trimmed short and carefully cleaned and should be particular even to fastidiousness about the care of his hands. The use of a sterile operating gown or duck suit and of sterile rubber gloves are additional safeguards. I cannot too strongly urge the use of sterile rubber gloves, as a routine measure in confinement cases. No general practitioner, and no obstetrician who is at all doubtful concerning his personal asepsis, is justified in attending women in confinement without utilizing this simple and effective precaution.

The Nurse.—As already stated, she should be free from any contagious or infectious disease, especially suppurative coryza or skin disease, nor should she recently have attended a case of infectious or contagious disease. She should also have had a full bath and change of clothing, paying special attention to the hair, which should be well washed with soap and water, then with

* Statistical proof from the Imperial Maternity Asylum of St. Petersburg shows a fall of 7.4 per cent. in fever in the puerperal woman by the substitution of the shower for the old-fashioned tub-bath.

plain water, and then with a bichloride solution (1:1,000). She should be expressly forbidden to give douches or practise any internal manipulations while cleansing external genitals.

Instruments and Water Used.—All instruments or other appliances which are to come in contact with any part of the parturient tract should be first thoroughly scrubbed with green soap and water, especial attention being paid to any cracks or crevices, and then boiled for not less than twenty mintes. They should then be removed by an aseptic instrument and kept in a solution of carbolic acid or lysol until needed, or, better, used directly from the boiler or sterilizer. All instruments which cannot be thus sterilized should be avoided. Catheters and douche tubes should be of glass or metal, preferably glass. If it becomes necessary to use a Barnes bag, a gum catheter or similar appliance, it should be first thoroughly washed with green soap and water and then sterilized by boiling or steam under pressure. All water used for immersing instruments, washing the external genitals, and giving douches should first be boiled.

3. *Limitation of Internal Examinations.*—It is of special importance if the physician has recently been in attendance upon any case of infectious or contagious disease, or if his hands have been contaminated by septic discharges of any kind, and in all cases during and after the third stage of labor, even if sterile rubber gloves are made use of.

It is, of course, true that in many cases it is impossible to carry out such rules as the above in practice. Skilled nursing and sterile accessories are not always available. But if the physician will but remember that septic contact is the one source of infection, if he insists upon and personally supervises cleanliness and antisepsis of the external genitals and the immediate surroundings, and avoids all unnecessary interference, especially after delivery, very satisfactory results may be secured even among most unfavorable surroundings.

It was formerly the custom to make frequent examinations during the whole course of normal labor, and this is still taught in some text-books, but the consensus of modern teaching is to the effect that such a course is unnecessary and dangerous. It is true that, with proper care as to asepsis, the danger of infection is limited, but it nevertheless exists, since even with the greatest care it is impossible to exclude all sources of error. Increasing experience diminishes the necessity for vaginal examinations, and it should be the effort of the physician to acquire such familiarity with abdominal palpation and the clinical history of labor that the necessity of frequent examinations may not exist.

Having made the first examination the attendant should endeavor as far as possible to determine the further progress of labor by external palpation and by observation of the patient, but, if in doubt, should repeat the examination often enough to satisfy himself as to the non-existence of a delayed first stage. Exact rules as to the frequency of examinations cannot be given, but in normal cases one careful examination early in the first stage and another after the rupture of the membranes should be sufficient for the experienced accoucheur.

In many instances it is possible to conduct a labor without any internal examination, since the chief information gained through the vagina is the stage of dilatation of the cervix, and this is often not especially important to know. Leopold and Sporling* and Leopold and Orb† believe that it is possible to conduct safely 90 per cent. of all labors without any other than external methods of examination. Among the first 1,000 cases of these observers there were only 6.5 per cent. of errors of diagnosis, while in the second thousand the percentage was only 1.77 per cent.

4. *Antistreptococcic Serum.*—The preventive power of Marmorek's serum was tested by Wallich upon 383 women who bade fair to have a septic puerperium or by reason of certain acts of exposure or accidents of delivery. Despite the precaution, 56 developed phenomena of infection. The possibility that the serum therapy of the future may offer us a preventive measure against puerperal sepsis, must be granted.

50 East Thirty-fourth Street.

THE DEVELOPMENT OF OUR KNOWLEDGE OF PUERPERAL INFECTION.†

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As we glance through the ever-thickening mists of the retreating centuries we find the mysterious and fatal fever that so often destroyed the young mother attributed to the sinister influence of an offended or malign Deity, the wicked spell of an enemy, some unknowable atmospheric influence, the diversion of the milk, the retention of the lochia.

Samuel Bard,§ the author of the first American work on Midwifery, said in his fifth edition published in 1819, "There are few diseases which have more perplexed physicians or on which their opinions have been more divided and contradictory than puerperal fever." . . . "It seems at length settled that it is inflammatory in its origin and putrid in its course, and, besides, that it is most remarkably influenced by an inscrutable epidemic constitution of the atmosphere." . . . "It is determined to be at one time more inflammatory, at another more putrid, and on some occasions so malignant and so suddenly fatal as to elude every plan of cure."

* Arch. für Gyn., XLV, 339 to 371.
† Arch. für Gyn., XLVIII, 304 to 323.
‡ An Introduction to a Discussion of Puerperal Sepsis, before the New York Academy of Medicine, May 21, 1903.
§ A Compendium of the Theory and Practice of Midwifery, by Samuel Bard, M.D., LL.D., President of the College of Physicians and Surgeons in the University of the State of New York, Fifth edition, 1819.

These sentences, sadly quaint as they appear now, then fairly represented the views of the leaders of our profession. Occasionally a voice would be heard in faint doubt or protest, but not until a time that your fathers could remember did a man appear who had the prophetic insight and the courage to uphold a doctrine nearer the truth.

February 13, 1843, there was read before the Boston Society for Medical Improvement, and in April, 1843, there appeared in the *New England Quarterly Journal of Medicine and Surgery* an essay by Oliver Wendell Holmes,* then the recently appointed professor of anatomy and physiology in Harvard University. This essay, big with prophecy and shining with the light of genius and truth, was bitterly assailed. Meigs, then professor of Midwifery at Jefferson Medical College, characterized it as the "jejune and fizenless dreaming" of a sophomore writer who would "black and ineffaceably spot the hard won reputation of every physician." Holmes' initial theorem, which radically opposed the most influential teaching of his time, was, "*The disease known as puerperal fever is so far contagious as to be frequently carried from patient to patient by physicians and nurses.*" He defends this with a mass of evidence just as unimpeachable now as when he placed it before his alarmed and hostile audience that February evening. Tracing relentlessly the "private pestilence" that too often followed like a specter the practice of many a physician and that, as he graphically states, "was as deadly in some (lying-in) institutions as the plague; which has killed women in a private hospital in London so fast that they were buried two in one coffin to conceal its horrors; which enabled Tonnellé to record within a few months 223 autopsies at the Maternité of Paris; which has led Dr. Lee to express his deliberate conviction that the loss of life occasioned by these institutions completely defeats the object of their founders; and out of this train of cumulative evidence, the multiplied groups of cases clustering about individuals, the deadly results of autopsies, the inoculation by fluid from the living patient, the murderous poison of hospitals, does there not result a conclusion that laughs all sophistries to scorn and renders all argument an insult."

It is evident that the factor in this remarkable essay which roused so much ire was the alarming statement that the accoucheur was directly responsible for the infection of his puerperal patient, that "the time had come when the existence of a private pestilence in the sphere of a single physician should be looked upon not as a misfortune, but a crime."

Meigs,† prominent, influential, learned, pedantic, in a series of lectures to his students in 1850, hotly combated the possibility of contagion, holding with most of those of his day to the old ideas of the time of Bard and the centuries before. His most important means of treatment, then time-honored and respected, were free purgation and the lancet. In the free use of the latter he placed almost implicit confidence. "Courageously and resolutely persevere until 24 ounces or more, not too many more, are taken away and you may retire after your ministration, feeling assured that the duty is well done and believing that the life of the patient will be saved." But, for reasons which must be obvious, he was in many cases compelled to stop short of the 24 ounces and then "would retire a disappointed and downcast man" because, as he says, "When I leave such a person I leave her, little hoping that she will be saved."

In 1847 Ignaz Semmelweiss,* a young assistant physician in one of the large Vienna maternities, became imbued with the idea of the essential identity of puerperal fever and the surgical affection then termed pyemia. He was convinced that the dreadful mortality of nearly 15 per cent. among the patients under his care was caused by an infection carried by students who came from dissection or autopsy direct to the examination of the puerpera. He clearly stated his position, saying: "I consider puerperal fever, without the exception of a single case, as caused by the absorption of decomposed animal-organic material." . . . "The bearer of the decomposed animal-organic material may be anything which is soiled by this material and comes in contact with the genitals of the patient." You are all aware how, after an attempt was made to destroy these putrid matters by washing the hands with chloride of lime as well as the usual soap and water, the mortality immediately fell to a point lower than ever before in the history of the institution.

The new doctrine of Semmelweiss abroad, as Holmes' idea here, was received with derision or apathy, and it was only after the development of bacteriology and of the principles governing the antiseptic and aseptic treatment of wounds that his idea gained wide support and appreciation and became the foundation of the exact knowledge of to-day.

Now we *know* that puerperal fever is always puerperal infection, and that, with rare exceptions, this infection is by the hands or instruments of midwife, nurse, physician, or the patient herself. We cannot shift this responsibility by the excuse of auto-infection, for since the careful work by Williams, and Kronig and Menge have shown the practical absence of pathogenic organisms in the vaginal secretions, we know that auto-infection must be extremely rare.

Of the various organisms causing puerperal infection, of the forms of the disease, of its treatment, it is not my part to speak.

My endeavor is to place before you a picture, indefinite and fragmentary though it be, which will bring to you a realization of the advance that has been made in our knowledge of the cause of the dread childbed fever of the past, the puerperal infection of the present. This knowledge, accurate and sufficient, when properly used, has

* Puerperal Fever as a Private Pestilence. New England Quarterly Journal of Medicine and Surgery, April, 1843.

† Nature, Signs and Treatment of Childbed Fevers, by Chas. D. Meigs, M.D., Philadelphia, 1854.

* Semmelweiss, die Ætiologie, der Begriff und die Prophylaxis des Kindbettfiebers, Leipzig, 1861.

enabled those surgeons who are in charge of the large lying-in institutions to almost banish puerperal sepsis from those under their care and to reduce its death-rate to an insignificant fraction of a per cent. But how is it in the general practice of our profession; have we all taken the lesson to heart; have we learned the measure of its importance and applied its precepts? To our sorrow and shame be it said that the mortality and morbidity of this infection, that we know to be preventable, has among the masses of the people scarcely been lessened from what it was a century ago.

From the records of this city we find that during the three years, 1900, 1901, and 1902, the deaths among the entire population were 209,704. During the same period the deaths recorded as from puerperal disease were 2,001, or nearly 1 per cent. of the entire number. From this you must draw the startling conclusion that one death in twenty-five among women during the child-bearing period is from a puerperal cause, and the greatest of these causes is infection. These facts seem almost incredible, but must impress their importance on your minds.

Three times within the past fortnight have I been called to the assistance of a brother practitioner and have found the mother of a wailing child, with eyes that looked from out the shadow of the wing of Israfil. And how, if your heart-strings become as the lute of Israfil, played upon by chill and numbing fingers, as you look upon the silent lips, the cold and rigid form of her that had been most dear to you, lost when she should have been the dearest. I can truly say with our immortal Holmes: "It is as a lesson rather than a reproach that I call up the memory of those irreparable errors and wrongs. No tongue can tell the heart-breaking calamity they have caused; they have closed the eyes just opened upon a new world of love and happiness; they have bowed the strength of manhood into the dust; they have cast the helplessness of infancy into the stranger's arms, or bequeathed it, with less cruelty, the death of its dying parent. There is no tone deep enough for regret, and no voice loud enough for warning. The woman about to become a mother, or with her new-born infant upon her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden or stretches her aching limbs. The very outcast of the street has pity upon her sister in degradation, when the seal of promised maternity is impressed upon her. The remorseless vengeance of the law, brought down upon its victim by a machinery as sure as destiny, is arrested in its fall at a word which reveals her transient claim for mercy. The solemn prayer of the liturgy singles out her sorrows from the multitude of trials of life, to plead for her in the hour of peril. God forbid that any member of the profession to which she trusts her life, doubly precious at that eventful period, should hazard it negligently, inadvisedly or selfishly."

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SUBLAMINE IN THE TREATMENT OF PARASITIC SCALP DISEASES.

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My attention was first called to sublamine as a substitute for mercuric chloride some eighteen months ago. It was claimed for it that it was fully equal to the older preparation in bactericide energy, that it had greater powers of tissue penetration, and that it had no caustic or irritant effects upon the skin. It at once occurred to me that if these claims were substantiated, the new drug had a most important sphere of usefulness open to it not only as a general external antiseptic for the surgeon and patient, but also as a remedy in various parasitic dermatoses, and for the internal and external treatment of syphilis.

For if mercuric chloride is still our most important disinfectant and parasiticide remedy and the most active drug at our disposal for the treatment of lues, it is because its properties are so valuable that we are obliged to employ it in spite of its many inherent disadvantages. It is poisonous, caustic, and irritant in the highest degree, as the skins of surgeons, nurses, and patients bear abundant testimony to. These drawbacks limit its usefulness in parasitic affections, and make sublimate injections our last resort instead of the regular and most efficacious treatment in syphilis.

The search for a mercurial preparation that possesses the powers of the bichloride without its disadvantages has been unremitting. The most promising field has been the organic combinations of the metal, where valuable remedies have already been discovered. It cannot be claimed, however, that any one of them possesses the bactericide and antiluetic energy of the original preparation.

On the other hand, disadvantages similar in kind if not in degree have been overcome in the cases of silver and the cresols by their combination with ethylendiamin; argentamine and kresamine possessing all the active powers of the two drugs with a minimum of their drawbacks. Schering's, to whom we owe these compounds, has tried to produce a similar mercurial combination, and finally succeeded in making an ethylendiamin citrate of the drug. This was found to be an efficient disinfectant and antiseptic, and to have distinct and marked advantages over corrosive sublimate. But it is a fluid, and therefore not convenient for handling and transportation. The sulphate of mercury, however, which is fully equal to the bichloride in all valuable properties, forms a solid compound with ethylendiamin. It has, therefore, been selected as the standard ethylendiamin mercuric compound, and has been given the name of sublamine.

The chief disadvantage of the bichloride lies in its irritant and caustic action when employed in efficient concentration. Even a 1 in 1,500 solution often causes too much inflammatory reaction,

and many skins are so sensitive to the mercury that it cannot be employed in any effective concentration at all. Besides this, sublimate solutions coagulate the albumin of the tissues; which limits the penetrative powers of the drug, and circumscribes its activity. It is claimed for the ethylendiamin sulphate of mercury that it is absolutely non-irritant, so that even a two-per cent. solution may be used if required; and that, since it does not coagulate albumin, its penetrant action is far greater than that of the older drug.

Both the new drugs have been investigated by competent authorties with results that in the main substantiate the claims that are made for them. Kroenig and Blumberg, Schenck and Zaufal, Paul and Sarwey, Moir, and others have published papers, clinical and experimental, upon the subject. The former work, however, has been almost entirely in the line of the employment of sublamine as a disinfectant for the surgeon's hands and the patient's skin; in which field, apparently, it is destined to replace corrosive sublimate. It has been little used as yet in specific and non-specific dermatoses. Antoni, of Stockholm, and Reinecke, of Halberstadt, have stated that they have employed it satisfactorily in these affections; but I am not aware that they have published any detailed accounts of their observations. Josef Frank, Assistant at Dr. Emil Senger's Clinic for Surgery, Gynecology and Diseases of the Skin, at Crefeld, has used it in various forms of eczema with good results; and also in place of the corrosive chloride for subcutaneous injection in 1 in 500 solution without the addition of sodium chloride. He expresses himself as highly pleased with its effects; it caused no irritation at all. This, so far as I can ascertain, is all that has been published so far (April, 1903) except in the line of surgical disinfection.

During the winter of 1901-2 I have had occasion to employ both the citrate ethylendiamin of mercury and sublamine on a large scale in certain cutaneous affections. An epidemic of ringworm broke out in a large orphan asylum to which Dr. George H. Fox and I were the dermatological consultants. The matter was not brought to our attention until the epidemic had assumed alarming proportions. Some 450 out of the 900 children in the institution were found to be infected. Many of them had it, of course, in light form; but there was a large proportion of cases of deep infection and kerion.

The serious nature of such a state of affairs is well known to those who have had charge of institutions of the kind. Ringworm of the scalp is not, under ordinary circumstances, an important affection; but even under the most favorable surroundings, and all the help that careful treatment and attention can give us, it lasts for months, and often taxes our therapeutic ingenuity to the utmost. In public practice the majority of cases are not cured at all. They go from clinic to clinic, getting now a little better and now a little worse; until, finally, the age of puberty is reached, and the malady cures itself. Meantime these children are excluded from school and grow up in the streets.

In a public institution, overcrowded as this one was in spite of the incessant efforts of the Consulting Board to prevent it, such an epidemic may cause ruin. A similar one, some years before, had nearly led to its permanent closure. Unremitting effort and the expenditure of a large amount of money is required to stamp it out.

The diagnosis was confirmed in cases selected at random from the various wards and buildings by microscopical examination and cultures; and a laboratory was organized where both methods could be systematically employed to control results. Proper isolation was enforced; observation wards, in which apparently cured cases were kept for three weeks without treatment, were instituted and no case was discharged until repeated examination and culture had proved its entire freedom from disease. A staff of nurses was provided, and the necessary sanitary and therapeutic arrangements were made. Additional medical assistance was engaged; and I transferred 150 infected girls to my skin service at Lebanon Hospital, where an efficient house and nursing staff were at my disposal.

The patients were divided into squads of varying size in accordance with the size of the rooms at our disposal, and put on various plans of treatment. The basis of all of them was the same. Every head was closely shaved once a week as soon as the inflammatory symptoms had subsided sufficiently to permit it; a barber being employed to devote his entire time to the children. Twice daily each head was thoroughly scrubbed with a brush, green soap, and hot water. Proper arrangements for the cleansing and sterilization of the barbers' and nurses' appliances and hands were made.

The plans of treatment instituted included the use of chrysarobin, formalin, croton oil, bichloride of mercury, carbolic acid, iodine and the two new combinations, the ethylendiamin citrate of mercury and the sublamine, in various strengths. I made a most determined effort to have proper records kept; for here was a chance to make comparative tests on a large scale, and to determine which plan of treatment gave the best and quickest results. A just criticism of the records of results in other similar epidemics is that they give only general impressions, and do not deal with figures.

Nevertheless, I must confess that we were not very successful. The difficulty in getting attendants of the ordinary kind to carry out a troublesome treatment for such long periods of time with unremitting devotion was almost insuperable. The members of the staffs and the assistants did their best; but the task was often discouraging. The great lack of discipline in the institution, and the fact that in many cases the very names of the children were unknown to the attendants, or imperfectly or improperly known, or interchanged, helped to create confusion. The patients were scattered in four buildings and at least a dozen different wards; and the lack of room necessi-

tated incessant transfers and retransfers of well and sick children. Changes in the staff and servants further complicated matters. Hence, after nearly a year, when the epidemic was practically ended, and the number of cases had sunk to the proportion usual in institutions with a clientele of that kind, the records were in a very unsatisfactory and fragmentary state.

Chrysarobin was soon abandoned for various reasons. It was impossible to keep the children from getting it into their faces and eyes, and we had a good deal of trouble with the dermatitis and conjunctivitis that it occasioned. Besides this the diffuse brown stain of the skin that it occasioned was a very serious obstacle to rapid examination of the affected heads. Each patient was examined daily, so that each physician had a considerable number to see to. The coloration doubled the time required, and greatly increased the strain upon the examiner. Chrysarobin is a good application for private practice, where one or two heads only are to be cared for, and where suitable protective bandaging can be employed. It is not suitable, however, for the treatment of large numbers of cases in institutions.

We found the same objection to iodine. This in combination with goose grease, has been highly recommended of late by Dr. Jackson, of this city, and it is undoubtedly an effective preparation. The menstruum is comparatively expensive, however, for use on a large scale, and the general coloration that it occasioned was a disadvantage. At Dr. Fox's suggestion a number of cases were put upon it; but we were soon compelled to change the treatment.

No definite results were obtained from the use of salicylic acid in any form and concentration, and its use was abandoned after a time. The same is true of carbolic acid, which was used pure, alcohol being employed after it when it seemed too irritating. Pure formalin was used in a number of cases by one of the house physicians without my consent; it cured the patches to which it was applied, of course, but at the expense of sloughing, ulceration, and destruction of scalp tissue. It was stopped at once, of course. In 10-per-cent. solution, which was well borne, it did not seem to make much change in the patches. We finally came down to the use of three drugs only, which we found sufficient for all cases, viz.: the bichloride, sublamine, and croton oil.

The ordinary mercuric bichloride was usually employed in 1 in 1,000 solution; but many cases could not stand its vigorous use twice daily in this strength, and it had to be diluted. In many cases 1 in 2,000 only could be used. Its effect was very slow, probably on account of deficient penetration; but we persisted in its use for purposes of comparison. In most cases we finally had to have recourse to 33 per cent. croton oil. This was applied several times in succession until a vigorous reaction took place. Then an ordinary soothing application (usually 3 per cent. salicylated oil) was used until the inflammation had subsided, and the bichloride was employed again.

Of the ethylendiamin preparations we employed the solid sulphate, sublamine, most largely; but a good many cases were treated with the fluid citrate. The latter was the only preparation obtainable at the time that the epidemic began; but since the properties of the two are the same, they can be considered together. We found them much less irritant than the bichloride. All the patients stood a 1 in 1,000 solution very well indeed; and in obstinate cases a 1 in 750 solution was used without trouble. Stronger solutions than that, however, gave trouble. It is possible, of course, that the shaving and scrubbing rendered many of the scalps hypersensitive. I cannot confirm the claim of absolute non-irritancy for the drugs. But they are much less obnoxious to tender or inflamed skins than the bichloride, and can be used at about twice the strength permissible for the latter.

Over 100 cases in all were treated with sublamine. As with the other plans of treatment, these were not selected cases, but included cases in all stages of the affection; some had merely a single small patch, while others were in an advanced and generalized stage of the disease. In this latter class were a number of cases in the older children who had had ringworm of the scalp for years, and whom we suspected with good reason to be uncured cases left over from the epidemic of several years ago. They had been at Randall's Island, the city institution for orphans thus affected, for months and years, and had been sent back to the asylum as cured. That this was not the case, however, is shown by the fact that some of them formed part of the contingent of chronic scalp cases that were always present in the asylum, and which undoubtedly formed the nucleus of the present epidemic. Some of these cases were not cured at the time when the epidemic ended. I believe that they belong to the small number of really incurable cases, and that their retention in the institution will lead to future trouble.

All the others did very well indeed under the sublamine treatment. Its action was more rapid than that of the bichloride, as might be expected from the facts that it had equal bactericidal with greater penetrative power, and that it could be employed in very much stronger solution. For the reasons already stated I am unable to give figures as to the time required for cure. But there can be no doubt that it was the most effective of the various methods of treatment employed.

Two other points of interest remain to be noted. The first is in connection with the microscopical and bacteriological test for the presence of ringworm. I was ably assisted by Dr. W. G. Eckstein in this part of the work at the beginning of the epidemic, and a number of apparently healthy heads were examined as well as those that were visibly affected. The astonishing fact was noted that a parasite indistinguishable from that of ringworm could be cultivated from scalps that were apparently perfectly healthy. The tri-

chophyton was seemingly present on most or all of the scalps of the children of the institution, possibly in an attenuated or non-virulent form. Perhaps it was the usual form kept in depressed growth by the prophylactic measures detailed below. At all events our appreciation of the fact necessarily led us to abandon the bacteriological test of cure after a time, and we finally came to rely on the macroscopic evidences alone. Cases in which repeated cultures had been made with negative results, and which were therefore discharged as cured, gave positive cultures later, though their scalps were apparently perfectly healthy.

The prophylactic measures employed for the protection of the healthy children were as important as the remedial ones used for the sick. There were peculiar difficulties in the way of their employment owing to the fact that most of the children had to go to school, and, it being winter, had to wear caps. It was impossible to prevent interchange of head covering; and this was a serious matter in the early days of the epidemic, when new cases were continually being discovered. Two sets of plain cloth caps were provided, one of which was in the steam sterilizer while the other was being worn. Every morning the fresh caps were distributed, and were collected again in the afternoon when the children came from school.

All the heads were kept cropped, the closest clipper being used on them at least once in two weeks. Each head was thoroughly washed every morning with bichloride, 1 in 3,000, in green soap lotion, rinsed, dried, and then well inunctcd with a 3 per cent. salicylic acid oil. This was disagreeable, and objected to both by the children and the public school authorities; but it was effective. The new cases discovered became fewer and fewer, and finally ceased altogether. There was an immediate recrudescence of the epidemic, and the appearance of some score or more of new cases, when one of the lay authorities took it upon himself to discontinue the oil inunctions for a few days. This confirmed me in the opinion that during the prevalence of an epidemic of this nature in an institution all the inmates' heads must be regarded as infected. Finally, every head in the institution was thoroughly examined by an expert twice a week, so that beginning cases could be at once detected, isolated, and treated.

Of course, no ringworm epidemic of such an extent could occur under proper management. Overcrowding and want of care in the admission of children, as well as insufficient supervision were its causes.

The Bactericidal Action of Ultraviolet Radiations.—In a series of experiments on the effect of exposure to the arc spectra of carbon and of various metals in the vitality of bacteria, J. E. Barnard and H. de R. Morgan (Proc. of the Royal Soc., July 31, 1903) found that the bactericidal action of light is almost entirely due to the action of those radiations in the ultraviolet region of the spectrum, which are included between the wave-lengths 3287 and 2265.

THE IMPORTANCE OF THE SURGICAL TREATMENT OF CHRONIC MIDDLE-EAR SUPPURATION.*

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It is with some hesitancy that I present before this body of eminent physicians and surgeons a paper upon the subject of aural suppuration. The importance of the early recognition of this condition, and its relief by appropriate measures of treatment, is fully appreciated by every clinician. To those who see a large number of cases, of all kinds, both medical and surgical, in the various large clinics and hospitals, the presence of an aural discharge is perhaps, of such common occurrence, and is so rarely attended by severe symptoms, that even the most careful may overlook, in many cases, the possible significance of this symptom.

If we turn to the pathological records, we find that Pitt (*British Medical Journal*, 1890, Vol. I, p. 634) reports in 9,000 consecutive autopsies at Guy's Hospital, between the years of 1869 and 1888, 57 cases of death due to aural suppuration; that is, one in every 158 autopsies.

Gruber (*Monatsschrift für Ohrenheilkunde*, 1896, p. 311) in a report of the autopsies held at the Vienna General Hospital, between January 1, 1873, and December 31, 1894, gives the number of autopsies as 40,073; death was due to aural suppuration in 232 cases or in one case in every 173 was death due to aural suppuration.

Poulson (*Archiv für klinische Chirurgie*, Vol. LII, Section 2), out of 14,580 autopsies at the hospital in Copenhagen, extending over a period between the years 1870 and 1895, found death due to aural suppuration in 48 cases or, in other words, in one case in every 303 was death due to aural suppuration.

Barker [Hunterian lectures], (*Illustrated Medical News*, London, 1889), gives the following statistics: in three of the London hospitals, during twelve years, there were 8,028 deaths. In 45 of these cases death was due to aural suppuration.

These figures show, with a fair degree of accuracy, perhaps, the part played by aural suppuration as the cause of death in a large number of cases dying in the general hospitals. While the total number of cases is not large, the number is certainly sufficient to demonstrate the danger of disregarding in any instance the presence of a chronic discharge from the ear.

From the statistics of Bürkner (*Archiv für Ohrenheilkunde*, Vol. XX, p. 81) we find that out of 33,017 cases of aural disease of all kinds, coming under his observation, 104 cases died from the effects of aural suppuration.

Randall (Transactions of the American Otological Society, Vol. V, Part I, p. 101), out of 5,000 aural cases, reports 15 deaths due to middle-ear suppuration.

Turning now to the reports of the New York

* Read before the New York Clinical Society.

Eye and Ear Infirmary, I find that during the past eight years 64,858 aural cases have been treated in this institution. Among these, there have been 20 cases of cerebral abscess, 46 cases of sinus thrombosis, and 24 cases of sinus thrombosis in which the internal jugular has been ligated, 119 cases of epidural abscess, 7 cases of cerebellar abscess, and two cases of otitic meningitis. These records are accurate, excepting as regards the cases of otitic meningitis. A careful record of these latter is not found in the reports, as many were not subjected to operative procedures, and have consequently, not been reported in the statistics of the hospital. These statistics show conclusively, I think, that aural suppuration constitutes a serious menace to life. It must be remembered that in my own statistics, as well as in those of Randall and Bürkner, all cases presenting at the clinic, for any cause whatsoever, have been included in this report; these include cases of impacted cerumen, inflammations of the external auditory canal, congenital malformations of the ear, in fact, every aural lesion is included in the total number of cases admitted to the clinic. In my own statistics, that out of 64,000 cases, 218 should have had intracranial complications, seems a very significant fact.

In analyzing these statistics more closely we find that during the past eight years, out of 64,858 cases treated at the clinic, the diagnosis of acute purulent otitis media was made in 4,836 cases, and that of chronic purulent otitis media in 14,487 cases. In other words, 19,323 cases of purulent otitis media, both acute and chronic, have presented themselves for treatment during the past eight years. In 218 cases, according to the statistics given above, serious intracranial complications were present, or about one case in every 88 of all purulent cases presenting at the dispensary, suffered from some severe complication. This number of serious complications seems to be rather large. The figures must be considered as being fairly accurate, however, as they are spread over a number of years, and represent the work of a number of different men, and not that of one individual.

It behooves not only the aural surgeon, but the general practitioner as well, to appreciate the grave menace to life which a purulent otitis causes and to protect his patient in every instance, by the early institution of such measures as may completely eradicate the disease in question. It may be argued by many present that they have seen numerous cases of aural discharge, lasting through a long life, the patient subsequently dying of some intercurrent disease. While I grant that out of the total number of cases of purulent otitis which may come under the observation of any one man, only a comparatively small portion will be followed by any fatal issue, I do contend that it is the duty of the physician to constantly bear in mind the grave consequences which may follow a neglect of this condition. A case which recently came under my observation, illustrates this statement. A young girl of fifteen years came under the observation of one of my assistants, suffering from a purulent otitis media upon the right side. The discharge had existed since infancy. Under aseptic irrigation and the application of mineral astringents the discharge diminished in quantity, the mucous membrane lining the tympanic cavity became less swollen and congested, and the remnant of the drum membrane became practically normal in color. The last time the patient was seen, there was very little discharge, and the ear was giving the patient absolutely no trouble. An examination revealed a large perforation involving the lower two-thirds of the drum membrane. About four days after the patient's last visit to the clinic she had a severe chill, followed by headache, and she came immediately to the hospital. She was admitted and at the time of admission the temperature was 103° F.; two hours later the temperature was 104° F. I examined the patient at this time and found the ear perfectly dry. There was a large perforation in the lower part of the drum membrane, as already noted. There was absolutely no redness or tumefaction of the upper portion of the membrana tympani and no swelling of the inner extremity of the external auditory meatus, close to the drum membrane, a condition almost invariably present when there is an involvement of the mastoid process. The patient complained of a moderate amount of headache, but said she did not feel very ill, and sat up in bed during the examination. She responded to questions perfectly. There was only slight tenderness on pressure over the mastoid antrum and no tenderness over the mastoid emissary vein. When I first examined the patient, I did not believe that the temperature of 104°F. was due to the condition in the middle ear; three hours later the temperature rose to 105.5° F. As no further symptoms were present, aside from the headache, local tenderness and the temperature, I decided to do an exploratory operation upon the mastoid, although, at that time, I hardly thought the temperature was due to a deep infection from the purulent otitis. The patient was prepared in the ordinary way and placed upon the operating table. On entering the mastoid antrum, there was a gush of thin and extremely offensive pus from the opening in the bone. This opening was enlarged and the fluid in the bony cavity was then seen to pulsate distinctly. A still further removal of the bone showed that not only were there involvement of the mastoid antrum, but also that the internal and posterior wall of the antrum had been eroded so as to expose the cerebellar dura and the dura covering the lateral sinus. The mastoid antrum and tympanic vault were filled by a mass of cholesteatomatous material. The first procedure was to perform a complete radical operation, throwing the mastoid cells, the middle ear and the external auditory meatus into one large cavity. All softened bone was removed by the curette. The dura over the lateral sinus was then examined. The sinus was prominent and did not pulsate. Incision of the sinus wall showed that the vessel was filled

by a soft clot; this clot was removed by the curette, and free hemorrhage from above followed. A smaller curette was passed downward into the sinus toward the jugular bulb, and the clot was removed as perfectly as possible. No hemorrhage, however, occurred in this direction. The inner sinus wall was discolored and protruded into the lumen of the sinus after the vessel had been opened, as though there was fluid beneath. I felt that I had to do with an abscess of the cerebellum, and incised through the inferior sinus wall directly into the cerebellar substance. A little softened brain matter was extruded through the incision. Incision with a narrow knife into the cerebellar substance and the careful use of the grooved director failed to reveal any purulent focus. I then sutured the internal sinus wall carefully, so as to close up the opening into the cerebellum. As there had been no hemorrhage from below, I next proceeded to expose the internal jugular in the neck through an incision running from a point just above the clavicle to the tip of the mastoid. The jugular contained fluid blood throughout its entire extent. At its upper portion and close to the bulb, however, the wall of the vein was very much thickened. The vein was secured low down in the neck between two ligatures, and was then dissected out completely, all tributary branches being doubly ligated and divided between the ligatures. A second ligature passed about the vein close to its entrance into the skull, and the vein was then divided below this and removed. The wound in the neck was completely closed by silkworm gut and silk sutures. The wound in the soft parts, exposing the sinus and cerebellum, was partially closed by means of silkworm gut sutures. The mastoid wound had been thrown into the external auditory meatus by the removal of the posterior wall of the bony canal, and was packed with iodoform gauze. A large dressing was then applied and the patient returned to bed. The temperature immediately fell to about 101° F., and did not rise beyond 101.5° or 102° F. after this. The first dressing was removed on the sixth day, and the wound in the neck was found to have united throughout by first intention. The incision in the dura had also healed perfectly. The patient made an absolutely perfect recovery. The temperature was normal at the end of the first week, and never rose above this point. This patient is perfectly well to-day, and is able to attend to her duties at the Normal College, where she is a pupil.

I have reported this case somewhat in detail as it shows how exceedingly treacherous is the disease under consideration. I might add that, the night before the patient was seen with these acute symptoms she was in absolutely perfect health and attended a wedding reception, returning in the early hours of the morning.

While the case last reported seems to be somewhat striking, a number of cases in which the onset of the symptoms has been sudden, have come under my own observation. In a case reported at the American Otological Society, in July, 1896, the patient was a man sixty years of age, who twenty years before had suffered from a double suppurative otitis following typhoid fever. For twenty years the ears had given him no trouble until about five weeks before I saw him. At this time he was seized with a severe vertigo and a feeling of fulness in the side of the head. The disturbance in the equilibrium was so marked that he was obliged to stop his work, and was confined to bed for several days. The acute symptoms disappeared, to a certain extent, in a few days. The pain in the left side of the head and the left ear, however, continued. The patient was under observation for about two weeks, during which time the temperature was normal. Suddenly the temperature began to rise and fluctuate between 102° and 104° F. The cranial cavity was opened just above the temporal ridge and the tympanic roof exposed. There was some roughening of the bone in this region, and the introduction of a director along the tympanic roof evacuated a large amount of bloody serum. A dural flap was turned down, and the brain substance explored, with negative results. The dural flap was therefore, replaced and held in position by sutures. A packing of iodoform gauze was introduced between the dura and the tympanic roof. The angles of the wound in the soft parts were sutured, the usual dressing applied, and the patient returned to bed. The temperature immediately fell after the operation and patient made a complete recovery.

In this case, a suppurative otitis had remained quiescent for a period of twenty years, and for some unknown reason, had suddenly caused an infection of the meninges and given rise to acute symptoms, which would undoubtedly have terminated the patient's life, had not prompt operative interference been undertaken.

In a third case, which came under my observation three years ago, the patient presented at the hospital, in the service of one of my colleagues, suffering from an acute exacerbation of a chronic purulent otitis. There was some evidence of mastoid involvement and it was at first thought that operative interference would be necessary. An effort was made to abort the acute symptoms by the use of the ice-coil. After the patient had been in the hospital for a couple of days, he developed an acute pneumonia. Although there was sufficient mastoid tenderness to warrant operative interference, this was deemed unwise on account of the condition of the lungs. When the pneumonic condition in the lungs had resolved, all mastoid symptoms had disappeared. There was still a discharge from the ear, however, when the patient left the hospital, and he was instructed to irrigate the ear several times daily until the discharge disappeared. About two months after he left the hospital he was brought back to the institution in a comatose condition. From his relatives it was learned that he had been in his usual health the day before; suddenly he had what seemed to be a convulsion and then became coma-

tose. At the time that I saw him, it was impossible to rouse him. The patellar reflexes were abolished, the plantar reflexes diminished, and the pupils did not respond to light. Ophthalmoscopic examination showed the left optic disc choked. Rectal temperature, at admission, was 102° F. As I was convinced that I had to deal with a cerebral abscess, I opened the cranial cavity just above the external auditory meatus, and explored the temporosphenoidal lobe. I should add, that as the first step of the operation, a complete mastoid operation was performed; but no opening being found through the tympanic roof, the cranial cavity was entered above the temporal ridge, as already described. On raising the dura from the tympanic roof, it was found to be slightly discolored. A curvilinear incision was made through the dura and a dural flap reflected. The cerebral substance immediately bulged into the dural opening. A director was then passed into the brain substance, and after having entered for a distance of an inch and a half, a little pus was seen to flow along the groove in the director. With the director still in position, a sharp knife was passed into the brain substance, evacuating pus and considerable softened brain tissue. The finger was then inserted into the abcess cavity, which was about the size of a pigeon's egg, and was found to be filled with broken-down brain tissue. The abscess was completely evacuated, and the cavity packed with sterile gauze. The patient recovered, although a second abscess cavity was subsequently developed, anterior to the first, and communicating with it. The patient made a complete recovery. Subsequently, I was obliged to do a radical operation upon the ear, for the relief of the middle-ear suppuration, which still persisted.

The insidious course which characterizes many cases of intracranial infection, due to a suppurative otitis, is well illustrated by the following history: A young lad came under my observation at the New York Eye and Ear Infirmary last year. He presented at the clinic with all the characteristic symptoms of an acute mastoid inflammation. The boy was immediately placed upon the operating table, and a large postaural abscess was opened. This was found to communicate directly with the mastoid cells, and a complete mastoid operation was performed. I was very careful at the time to remove, as I thought, every vestige of diseased bone. The entire mastoid was taken away, and its entire cellular structure obliterated. Examination with the probe and the finger revealed hard bony walls in every direction. The patient was returned to the ward in good condition. The temperature, which had been somewhat elevated at the time of his admission, fell to about normal and remained so. The wound was first dressed on the fifth day. On removing the dressings, I found these to be very foul; considerable pus was present in the dressings, and the odor from the wound was exceedingly disagreeable. I remarked this at the time, and examined the wound again very carefully, but could find no solution of continuity in the bone. The temperature had remained normal ever since the operation; the child had no pain, but had been very quiet. He slept a good deal of the time, but roused easily when spoken to, answered all questions intelligently, and seemed to be progressing favorably. On the day after the first dressing the temperature suddenly rose to 104.5° F., in the morning, and at noon the boy was dead. Autopsy revealed a large cerebellar abscess. At one point, corresponding to the sigmoid groove in the mastoid, there was a minute perforation, leading directly into the abscess cavity. This had evidently been overlooked at the time of the operation and at the time of the first dressing. I report this case simply to show the great care which is necessary in the conduct of what seems to be a simple mastoid operation. Of late I have been removing so much bone in mastoid operations that I have frequently thought that I had passed beyond the limits of diseased tissue, and that a little more conservatism would be advisable. This case would seem to show, however, that to err upon the side of removing healthy bone is exceedingly wise. Had I removed the thin internal table of the skull covering the sinus, I should have discovered the cerebellar abscess, could have evacuated it, and could probably have saved the patient's life.

Another case, with a history practically identical with the above, occurred in the service of one of my colleagues only a few weeks after.

These histories have been taken at random from my operation book, but show clearly, I think, how careful the surgeon must be in dealing with a suppurative process within the middle ear, especially in those cases in which the suppuration is chronic. From the statistics which I have given it seems fair to suppose that over one per cent. of all cases of chronic suppuration will develop some severe intracranial lesion.

The time allotted to me will scarcely be sufficient to cover the entire subject. I shall, therefore, ask you to consider with me those measures which seem most advisable for the cure of chronic suppurative otitis media as, by the early institution of such measures, we are able to remove all danger of intracranial involvement. In order to absolutely protect these patients against the danger of intracranial complications, it is necessary for the surgeon to remove all diseased bone from the middle ear and the adjacent pneumatic spaces. In cases where extensive intratympanic caries is present, this is only possible by first entering the mastoid antrum by means of a free incision behind the ear. After the mastoid antrum is entered, the communicating wall between the mastoid cells and the middle ear, that is, the posterior bony wall of the external auditory canal, should be broken down. The next step is to expose thoroughly the upper portion of the tympanic cavity, that is, that part of the middle ear which lies above the superior wall of the bony meatus. This is known as the tympanic vault, or the attic of the tympanum, as it is sometimes called. After this rather extensive

operation on the bony parts, the external auditory canal and the middle ear, the mastoid antrum and cells are converted into one large cavity. One large bony cavity is thus formed, whose walls can be closely inspected by means of reflected light, or by direct illumination, in most cases, and every vestige of diseased bone can be removed. In performing such an operation, the surgeon should not stop until all softened bone is removed. Certain important structures are exposed during the operation, and serve as landmarks to guide the surgeon in completing the procedure. These structures are, the horizontal semicircular canal and just below it, the aqueductus Fallopii, lodging the facial nerve. Further backward and lying more deeply, we sometimes expose the posterior semicircular canal.

While I do not wish to go too much into detail in describing the radical operation for the relief of chronic middle-ear suppuration, it seems necessary to describe the procedure somewhat *in extenso*, in order to present more clearly the objects to be accomplished by the operation and the comparative simplicity of the procedure, if properly conducted. The incision through the soft parts is made from the tip of the mastoid process upward and backward over the mastoid cortex, and about one-half an inch behind the line of auricular insertion. This incision follows the line of auricular attachment to a point just above the insertion of the auricle. The incision is then extended horizontally forward for about three-eighths of an inch. Bleeding points are grasped with clamps, and the anterior flap, including the auricle, is crowded forward, exposing the upper, posterior and inferior margins of the bony meatus. The anterior flap is then held in position by means of a retractor and the mastoid antrum entered just behind Henle's spine. After the antrum has been entered, the posterior wall of the external auditory meatus is broken down so as to throw the antrum and external auditory canal into one large cavity. As the facial nerve lying in the aqueductus Fallopii runs downward and backward through the mastoid process, the posterior wall of the canal cannot be broken down throughout its entire extent. It will be remembered that the aqueductus Fallopii and the horizontal semicircular canal together form a prominence on the inner tympanic wall at its upper and posterior portion,—this prominence corresponding to the floor of the *aditus ad antrum*, that is, the small channel leading from the middle ear into the mastoid antrum. In breaking down the posterior canal wall, a somewhat quadrilateral piece of bone should be removed. The base of this quadrilateral is outward and corresponds to the vertical diameter of the external auditory meatus. Its upper boundary corresponds to a line drawn from a point where the cortex is entered behind Henle's spine, inward to the superior wall of the *aditus*. The short side of the quadrilateral corresponds to the outer wall of the *aditus ad antrum*, and lies just beyond the prominence of the horizontal semicircular canal and aqueductus Fallopii; the lower boundary of the quadrilateral is a line drawn from the floor of the external auditory meatus to the floor of the *aditus ad antrum*. It will be seen that by the removal of this irregular wedge-shaped piece of bone, the prominence of the horizontal semicircular canal and of the aqueductus Fallopii will be thoroughly exposed, and that this exposure will permit of a free inspection of the *aditus ad antrum*. As the bone is removed from without inward by successive cuts of the chisel, the cutting instrument should be directed from below upward until the *aditus ad antrum* is reached. The upper border of the quadrilateral should be formed by deepening the bony cavity directly inward on a level with the superior wall of the meatus. In this way, the surgeon will expose the prominence of the horizontal semicircular canal and of the aqueductus Fallopii without injuring these structures. He will then be able to inspect the mastoid antrum, the *aditus* and the lower portion of the tympanic cavity. The next step in the operation is the removal of the external wall of the tympanic vault, that is, the inner extremity of the upper wall of the bony external auditory meatus. It will be remembered that the horizontal plate of the temporal bone, in this region, splits into two segments, and that between these segments is lodged the bodies of the ossicula. It is the removal of this lower plate of bone which exposes freely the tympanic vault and finally allows a free inspection of the entire tympanic cavity and mastoid cells. After the tympanic cavity has thus been freely exposed, the curette is used to remove all diseased bone and granulation tissue. The ossicula are almost always carious in these cases, and are removed by the curette. The internal tympanic wall must be carefully inspected and all softened bone removed by the curette. Great care should be exercised in carrying out this step of the procedure. The parts should be repeatedly dried by means of gauze pledgets, carried to the very bottom of the wound, and then the walls of the cavity thoroughly inspected by means of a good light. Every trace of softened bone must be removed in order to effect a complete cure.

We sometimes find that the disease has invaded the horizontal semicircular canal, or, less frequently, the posterior semicircular canal. The aqueductus Fallopii may also show some evidence of softening. The operator is to remove softened bone in this region quite as freely as in the neighborhood of less important structures. It is useless to perform an operation of this kind and to leave any softened bone, although in its removal the horizontal semicircular canal may be opened or the aqueductus Fallopii may be entered and the facial nerve exposed. By careful manipulation, even if the facial nerve is exposed, it can usually be protected from injury. The entire bony covering may be removed, and yet the nerve remain intact. In a case operated upon recently, I found caries involving the horizontal semicircular canal. I curetted this region very thoroughly, and asked the attending physician, who was present, if there had ever been any attacks of vertigo. He assured

me that the patient had complained of none. A few days after the operation on questioning the patient, I found that she had had a number of attacks of vertigo, which had been entirely forgotten by the medical attendant. These attacks were undoubtedly explained by the involvement of the horizontal semicircular canal. In this case no unpleasant symptoms followed the invasion of this region. After all diseased bone has been removed, the entire bony cavity is best lined by means of Thiersch grafts. These are held in position by small pledgets of cotton, the entire bony cavity being lined with the grafts, and the grafts held in position by these cotton plugs.

In order that all parts of this large bony cavity may be freely opened to ocular inspection during the healing process, it is usually necessary to enlarge the external auditory meatus. This is done, preferably by dividing the fibrous canal by means of a horizontal incision along its postero-inferior border. This incision is carried well out into the concha. After the knife has entered the concha, the incision is carried upward, dividing both the cartilage and integument of the concha to a point just below the anterior crus of the anthelix. The cartilage is then dissected out from this flap and excised. This concho-meatal flap is turned upward and backward and retained in position by means of catgut sutures, after which the auricle is replaced and the posterior wound sutured throughout, usually with silkworm-gut and silk sutures. In this way, the entire middle ear and mastoid cells are thrown into one large cavity, continuous with the external auditory meatus, and the entire cavity is lined with epithelium.

The results obtained in these operations have been extremely satisfactory. The first dressing is done on the fifth or sixth day, at which time the posterior wound will be entirely healed. In some of the cases the ear has been practically dry at the end of two or three weeks. It can easily be seen, from this description, that if the operation is thoroughly carried out and all diseased bone removed, there is no possibility of any further trouble with the ear, and the intracranial structures are absolutely protected from invasion. Out of 70 cases operated upon by this radical procedure 54 were cured, 11 improved and 5 are still under treatment.

In certain cases it is impossible to graft the cavity at the time of the primary operation. In these cases, the concho-meatal flap is made at the time of the primary operation, and the posterior wound partially closed by means of sutures. The middle-ear cavity is packed either with iodoform or sterile gauze. At the end of two or three days the gauze is removed, and if the bony cavity is healthy and there is no hemorrhage, an anesthetic is given, the grafts applied, and the posterior wound completely closed, in the manner already described.

In some instances it may seem unwise to employ grafting at all. In such cases the concho-meatal flap is made, the posterior wound sutured and the bony cavity packed through the external auditory meatus with iodoform gauze. The first dressing is made at the end of six or seven days, at which time the posterior wound will be found united, and the entire bony cavity covered with healthy granulations. In these cases the subsequent treatment consists simply in keeping this granulating surface cleansed by means of the aural douche, used once or twice a day, and the destruction of any exuberant granulations by means of the bead of nitrate of silver. Complete dermatization of the cavity takes place in these cases quite rapidly, although not as rapidly, naturally, as where the epithelial grafts have been used. From a rather extensive experience, this radical operative procedure seems to offer the best protection to the patient in all cases of chronic middle-ear suppuration. In making this statement I do not wish to be understood that I should advocate the radical operation in every case of chronic aural discharge. I have purposely given first the operative procedure to be employed in those cases where the destruction of the bone is extensive, and where the most radical measures are necessary. In some cases of chronic aural discharge, we find that this discharge is easily kept under control by cleansing the ear once or twice daily by means of a syringe. An examination by the probe shows that the caries is limited in extent. In these cases the operative procedure to be advocated is the removal of the carious ossicles and thorough curettement of the roof of the tympanum through the external auditory meatus. The inner extremity of the upper wall of the meatus may also be removed by small rongeur forceps, so as to enable a thorough curettement of the tympanic roof and of the tympanic end of the *aditus ad antrum*. This procedure is efficacious in the milder cases of chronic middle-ear suppuration.

I have upon my records a large number of cases operated on in this manner, in which, after a number of years, there has been no recurrence of the disease and in which the patients have remained in perfect health. Out of 92 cases operated upon 53 have been cured, 25 improved, 2 unimproved and in 12 the result is unknown. The disadvantage of the procedure is that, no matter how carefully conducted, it will not cure every case. The surgeon is quite often misled by his examination, and will believe that the intratympanic caries is confined to the ossicula and to those parts of the middle ear easily accessible through the external auditory canal. While the removal of the ossicula and curettage of the tympanic walls improves these cases and diminishes the danger of intracranial infection, it will not absolutely stop the discharge unless all diseased bone has been reached. This operation is justified in a certain proportion of cases, but the surgeon should usually warn the patient that this operation may not give him complete relief, and that, later, the more radical procedure may be necessary. The advantages which the simpler operation possesses are, in the first place, that the convalescence is more rapid, and that no external incision is neces-

sary. In the second place, this operation seldom, or almost never, causes any diminution in the power of audition. While interference with audition is rare, following the radical operation, it does occur, and if the hearing in the affected ear is good, the surgeon is frequently justified in advising the simpler procedure, in the hope that this may suffice to cure the suppuration, without running the risk of seriously interfering with the function of the organ.

We have still another class of cases of suppurative otitis to deal with, in which, before the case comes under observation, the suppurative process has practically run its course: intratympanic caries has occurred, the softened bone has been thrown off, and we have to deal simply with the results of an old suppuration. We frequently find, in cases of this character, that there is a large central perforation in the membrana tympani. The history of the case will be that the ear does not discharge continuously, but only when the patient takes cold. In these cases, a thorough sterilization of the ear as soon as the discharge appears, by mopping out the canal and middle ear with a mild antiseptic solution, and dusting a little boric acid over the internal tympanic wall, will frequently cause an immediate cessation of the discharge. The efforts of the surgeon, in cases of this character, should be to prevent these repeated congestions of the tympanic cavity. This is best carried out by attention to the upper air tract. In young children we frequently find this condition following the exanthemata; in these children enlarged tonsils and adenoid growths are very common. With a history of recurrent attacks of aural discharge, and with the presence of enlarged tonsils and adenoid growths, the surgeon should first restore the upper air passages to their normal condition, by removing the enlarged tonsils and the adenoid growths. In a number of instances, I have seen this operation followed by a complete cessation of the discharge from the middle ear, and the dermatization of the tympanic cavity.

In concluding my remarks, I would recapitulate as follows: In all cases of persistent and profuse aural discharge the radical operation is the operation of election. In cases of recurrent aural discharge, associated with lesions of the upper air tract, this tract should first be put in a normal condition.

In case of persistent but slight discharge from the ear, the operator may advise the removal of the carious ossicles, together with thorough curettement of the middle ear through the external auditory meatus. It should always be explained to the patient, however, that this operation is a tentative one, and that the more radical procedure may be necessary later.

New Memorial Hospital at Elkins, W. Va.—The Davis Memorial Hospital at Elkins, W. Va., built by ex-Senator Davis in memory of his son, who was drowned off the coast of Africa while touring the world, was opened October 8. The building was erected at a cost of $80,000.

MEDICAL PROGRESS.

MEDICINE.

Attempted Suicide with Typhoid Culture.—A recent case of attempted suicide by efforts to contract disease is reported by P. Dufloco and R. Voisin (Archives Generales de Médecine, Sept. 1, 1903), and serves as a laboratory experiment in typhoid inoculation. The woman had worked about a hospital, and shortly after her marriage put pieces of ice along her back and exposed herself to cold drafts of air, but the expected pneumonia failed to supervene. Later she became pregnant, and having seen a pregnant woman abort and die with typhoid fever, set to work to learn how she might contract the disease. She then secured two culture-tubes of typhoid bacilli and swallowed them. On the third day she had a violent headache and felt weak. The headache disappeared on the fifth day, but was followed by malaise, restlessness and loss of appetite. On the sixth day she remained in bed with weakness, headache and sore throat. On the seventh day the morning temperature was 37.6° C. and the evening 38.6° C., the sore-throat was better, and there were abdominal pains. On the eighth day rose-spots appeared, and there was much prostration; there were two slight epistaxes. On the ninth day the abdomen was tender, not distended, spleen not felt; serum diagnosis rapidly positive, 1-15, but at 1-50 indefinite. The subsequent course was that of a severe typhoid infection, a recrudescence prolonging the disease. In spite of much pain about the uterus, the patient did not abort, but recovered and was subsequently delivered of a healthy infant at term. In this case the period of incubation was only two days, the period of invasion six days, but the rest of the attack was normal. This observation illustrates the specificity of the typhoid bacillus, and it is probable that the rapid development of the disease was due to swallowing such a large number of the bacilli, with their already prepared toxins.

The Left Auricle in Mitral Stenosis.—Upon the modifications which the left auricle undergoes in mitral stenosis depend the symptoms, evolution and complications of that condition, writes H. Vaquez (Trib. Méd., Aug. 29, 1903). The compensatory hypertrophy of the left auricle may increase the normal capacity of that organ—35 to 40 c.cm.—to 150 c.cm.; and Rigaud has reported a case in which it approximated the dimensions of the fetal head. The normal limits of the left auricle may be defined posteriorly, according to Potain, by percussion within an area bounded internally by the spinal column, externally by the vertebral border of the scapula, above by a horizontal line on a level with the spinous process of that bone and below by its inferior angle. The area of dulness embraced within these limits measures 75 to 78 mm. in the vertical and 25 to 30 mm. in the transverse diameter. In mitral stenosis, this area of dulness may be increased to 120 mm. in the vertical and 65 in the transverse diameters. The author especially emphasizes this point in the differentiation of the single lesion—mitral stenosis—and mitral stenosis accompanied with aortic insufficiency; percussion being negative in the latter, while demonstrating auricular hypertrophy in the former condition. A symptom which Vaquez has frequently noted in mitral stenosis is pain in the back, located between the spinal column and the vertebral border of the left scapula. To this he gives the name auricular pain. It may appear early, be constant or develop only with fatigue, exertion or upon strong percussion. Examination of the walls of the auricle revealed to the author a condition of cardiac cyanosis; the capillaries being distended, gorged with blood, becoming varicose and displacing the muscular fibers. To this stage succeeds

fatty infiltration without degeneration and tendency to connective-tissue proliferation. The apoplexies secondary to these changes constitute a grave source of danger in the thromboses and emboli to which they may give rise.

An Oats Diet in Diabetes.—The value of an exclusive diet of oats in severe cases of diabetes mellitus was announced in 1902 by Carl v. Orden, who now publishes some further observation on this method of treatment (Berlin. klin. Woch., Sept. 7, 1903). He has now treated about 100 cases with varying results. The diet consists of oats given in large quantities, in the form of oat flour or flakes, together with simple albumins and butter—excluding all other carbohydrates and meat. The usual daily allowance consisted of 250 grams of oats, 100 grams albumin (vegetable or from eggs), and 300 grams of butter. This was made into a soup and given every two hours. Wine or cognac was occasionally allowed, and also strong black coffee. He details a number of typical cases in which this diet was tried and in comparison with the other cures lately proposed, such as the potato diet of Mosse and the milk diet of Winternitz, the oats diet was attended with much more favorable results. A mixed diet of oats and wheat bread immediately was followed by an increase in the amount of sugar. The author advises, however, against the employment of this method in all cases and suggests that a careful trial be made in each individual instance, for he himself has observed cases in which the diet was attended by no improvement or even made the patient worse. The theory of the action of this food still remains in abeyance, but is being made the subject of experiment by the author.

Guajac Reaction in Leucemia.—Since even small quantities of the blood and bone-marrow of myelogenous leucemia will give a blue color with tincture of guajac, while the thymus, spleen and lymphnodes do not give this reaction, E. Meyer (Münch. med. Woch., Sept. 1, 1903) determined to study the behavior of the different leucocytes in this direction. If the blood of a case of myelogenous leucemia was centrifuged and the thick layer of leucocytes which had settled was tested, the reaction was negative unless the cells were diluted sufficiently with distilled water. Serum or physiological salt solution as diluent gave negative results which prove that the active substance is held in combination in the cells. The same experiment repeated with the blood and bone-marrow of a case of acute lymphatic leucemia, was negative. Negative results were also obtained with recent pus with well-preserved cells except on dilution, while decomposed pus did not require the addition of water. The active substance was isolated by means of a complicated process. It does not belong to the proteids or albumoses but is probably a ferment. By boiling it, it will no longer react with guajac unless peroxide of hydrogen is added.

The Use of Gelatin in Hemostasis.—Some recent clinical experiences in the employment of gelatin by rectal injections are published by T. Pfeiffer (Fortschr. d. Med., Sept. 1, 1903). These include 23 cases, comprising 16 of pulmonary hemoptysis in tuberculosis, 4 of gastric ulcer, and one each of epistaxis, pulmonary infarct and purpura hemorrhagica. The method was as follows: 15 grams of gelatin were dissolved in 150 c.c. of hot water, allowed to cool to the body temperature, and then injected under slight pressure as high as possible into the colon. These are given from one to three times daily and are usually well-retained—no evidences of the gelatin being visible in the stools. Even after the bleeding has stopped it is well to continue the enemas once daily for several days. The results in many of the cases were quite remarkable. In some the bleeding came on again where the treatment was stopped too soon, but as soon as it was resumed, the bleeding ceased at once. In a few cases the results were negative and in some the effects were not well marked. This uncertainty is also found when the gelatin is injected subcutaneously. The rectal injections are not, however, attended by unpleasant complcations, are free from the dangers of infection, and are quickly and readily applied. These may be considered of sufficient advantage to permit the substitution of the latter for the former.

Occurrence of Casts in Nephritis.—Casts without albumin may occur with jaundice and after the use of certain drugs (especially salicylic acid) but in the majority of cases they are pathognomonic for nephritis. D. Schwarzkopf (Münch. med. Woch., Sept. 1, 1903) recommends a careful search for them in all cases, since they often form the first symptoms of the disease, long before albumin is present and cardiovascular symptoms make their appearance. In another article A. Treutlein (Münch. med. Woch., Sept. 1, 1903) states that there are typical cases of nephritis with albuminuria and albuminuric retinitis but without casts in the urine. Casts are probably secreted here but a "cylindrolysis" goes on, induced by the colon bacillus in the bladder or in the renal pelvis and tubercle.

Glycosuria after Removal of the Pancreas.—The relations of the pancreas to the disintegration of sugar are well-known for if the organ is removed completely, diabetes appears. It is peculiar, however, that the degree of glycosuria varies within very wide limits and the reason for this has not yet been clearly settled. H. Lüthje (Münch. med. Woch., Sept. 8, 1903) finds that if dogs with extirpated pancreas are not fed, the glycosuria will disappear entirely. Sugar may still be detected in the blood, but it is completely used up by the organism. This proves that some other organ possesses the same functions as the pancreas, but to a less degree for even where the duodenum and the entire retroperitoneal tissue was removed so that no trace of pancreatic tissue could be left behind, the same phenomenon was noticed. It is also possible that the sugar is normally destroyed by the coordination of several organs. Another explanation, however, must be considered. Since glycosuria disappears only with fasting, when the animal begins to use up its own organized proteid, it is possible that the sugar derived from this source is destroyed by different organs than the sugar ingested. A similar phenomenon is observed in man: if a diabetic suffers also from severe cachexia or from fever, the glycosuria often ceases. As soon as carbohydrate is given here, sugar again appears. The same holds true if a dog with extirpated pancreas is again fed with foreign proteid.

Reactions for Albumin in Concentrated Urine.—A peculiar and hitherto undescribed behavior of albuminous urine is mentioned by B. Hallauer (Münch. med. Woch., Sept. 8, 1903). If normal urine is concentrated on the water-bath to half its volume, and albumin then added, the boiling test will be strongly positive but the ring and ferrocyanide tests absolutely negative. As soon as water is added, a turbidity will appear. If the urine is still further concentrated to one-fourth its volume, even the boiling test is negative. The substances which interfere with these reactions are: for the ring test, urea; for the boiling test, urea and neutral salts, and for the ferrocyanide reaction, the phosphates. It is thus necessary to dilute concentrated urines before testing.

Gums in Mercurial Poisoning.—Several cases of mercurial poisoning have been observed by D. Glibert

(Bull. de l'Acad. Royal de Med. de Belg., Tome XVII, No. 6) where a blue line was present upon the gums, very similar to that found with lead. This fact is not generally referred to in literature, which is the more remarkable, since, from the appearance alone, it is hardly possible to distinguish it from the lead line. The history and other symptoms must be taken into account.

Prolonged Slow Pulse.—A more or less slow pulse is frequently observed in meningitis, cerebral tumors, jaundice, myocarditis, fatty heart, and in poisoning by some drugs. Otherwise it is a rather rare phenomenon, unless we include some cases of subacute polyarthritis and acute attacks of gout. I. S. Kraindel (Prakt. Vrach, No. 30, 1903) reports a case in which slowness of the pulse was brought on by an attack of gout. The pulse fell to 18 to 19 per minute; the pause tween the heart beats would every two minutes become so prolonged that the patient lost consciousness, the respiration became superficial or even ceased altogether; in 4 to 5 seconds consciousness returned but the pulse remained the same. Low position of the head, injections of camphor and inhalations of oxygen relieved the patient temporarily, bringing up the pulse to 24 to 25 per minute. The improvement in the pulse ran parallel with the improvement in the gouty condition, and any exacerbation of the latter reacted at once on the pulse.

The Relation Between Fever and Glycosuria.—It has been claimed by certain observers that the occurrence of fever during a glycosuria was accompanied by a diminution in the amount of sugar and a greater tolerance of a carbohydrate diet. This question has been debated *pro* and *con* and the latest contribution to this subject is by P. F. Richter (Berlin. klin. Woch., 1903, No. 37) who has studied the effects of simple temperature elevation and that due to infection. A glycosuria was artificially induced in rabbits by the injection of adrenalin chloride. In the first series of animals a rise of temperature was induced by an injury to the heat center in the corpus striatum. As soon as this was sufficiently well marked, 0.002 gm. ($^1/_{30}$ gr.) was injected subcutaneously and the sugar determined for the succeeding twenty-four hours. The temperature seemed to have no effect whatsoever on the glycosuria in these cases, and the amount of sugar was the same as in those animals where the adrenalin had been injected without stimulation of the heat center. Where a rise of temperature had been induced by the injection of a streptococcus culture, it was found, however, that in the majority of cases, the glycosuria disappeared entirely. This will account for the variation in the results obtained by different observers. The author believes that the diminution in the quantity of sugar excreted is due to the fact that certain bacterial processes induce a greater consumption of sugar in the organism and in this way diminish the amount which finds its way into the urine. There is a possibility that this observation may some day find a practical application.

Gouty Intestinal Lithiasis.—A case is reported by E. Leonardi (Gazz. Osped., Aug. 30, 1903) in which diarrhea, with occasional bloody stools, having its origin in exposure to cold and wet, had resisted all methods of treatment during a period of three years; at the end of which time the patient came under his care. Inquiry into the family history elicited the fact that the father was obese, gouty and suffered from gallstones; while the mother was also obese and arthritic. Prior to the patient's illness he was inclined to superabundant flesh. An examination of the feces was made, in the course of which the presence of intestinal gravel was discovered. Regulation of the diet and manner of living soon reduced the number of stools from 40 to 10 and finally two daily. The patient was limited to purées of fresh vegetables, soups and very small quantities of meat; acids and wines being prohibited. To promote a more active metabolism and stimulate nutrition, moderate exercise, fresh air and baths were advised. The therapeutic treatment consisted in hypodermatic injections of sodium cacodylate, strychnine, mineral waters and tannalbin as an astringent. The success of this line of treatment in the face of the failure of all other measures during three years, together with the family history and finding of intestinal gravel justifies, in the author's belief, the diagnosis of gouty intestinal lithiasis. He holds that gout, renal, biliary and intestinal lithiasis may appear in the same individual at different periods of his life or in different members of the same family; and that such manifestations are hereditary.

Alkalinity of the Blood.—An examination of the blood of 63 patients suffering from various ailments, has been made by W. Orlowsky (Deut. med. Woch., 1903, No. 34), with particular reference to the alkalinity. In health the alkalinity ranged from 240 to 267 mg. sodium hydrate in 100 c.c. of blood with the litmus test. In disease the alkalinity was found proportional to the number of red cells, declining when there were few red cells and increasing when they became greater in number. The internal administration of an alkali or giving the latter in a tepid enema, had only a transient effect in increasing the alkalinity, although the second method seemed to have a more pronounced effect than the former.

Dietary for Goutily-disposed Persons.—It can hardly be doubted that many, if not all, of the dietetic methods practised to-day are founded on the commonly accepted theory which is held as to the pathology of gout—to wit, its dependence on an abnormal production or disposal in the system of uric acid and its immediate congeners. D. Duckworth (Practitioner, Aug., 1903) believes that gout is not purely an humoral disorder but is dependent on a neurohumoral pathogeny. It is not necessary to demonstrate the presence of a uric diathesis. In any case it is certain that the peccant matter of gout is produced within the body, and is thus autotoxemic, not entering infectively from without as is the case in rheumatic or other varieties of toxemia. Also, the subject of gout, either by inheritance or acquirement, is so far peculiar in his constitution that he reacts differently to various agencies, such as climate, food, etc., from persons not so disposed. The metabolic processes of the gouty are abnormal. Many of the methods in practice relating to diet as well as to therapeutics for gout are founded on the principle of treatment for the *disease* and not for the *patient*. This is not the true clinical method and it constitutes a radical fault in medicine. There should be no treatment for gout and no special diet for the gouty, as such, but there is a treatment and a management for the particular patient who manifests gouty symptoms. The author believes that the ordinary rules laid down in regard to the restrictions of the diet are not founded upon any rational principles and are frequently distinctly harmful. With respect to animal food generally, it may be declared that it is not only harmless but beneficial to gouty persons provided it be taken in moderation. The alleged difference between red and white meats he regards as nonsense. Fish, especially fresh and white, is one of the best articles of diet for the gouty. Lobsters, oysters and most shell fish are quite innocuous, provided they are eaten in good condition. Viscera need not be excluded. With regard to vegetable food, it is hard to understand why plainly cooked

potatoes should be excluded. Many dyspeptics are better able to digest separately a meal of proteids or carbohydrates, but this is not peculiar to gouty patients. Fruit is condemned for very inadequate reasons. Some gouty people may be better without it but most of them can take fruit, raw and cooked, in moderation at proper times of day not only with impunity but with benefit. Tea, cocoa and coffee, properly prepared are perfectly harmless. The greatest consumers know nothing of gout. Certain vegetables, as spinach and the cresses are particularly valuable. Asparagus should be used sparingly. Respecting wines it is certain that the least excess in any of them is harmful and most moderate drinkers take too much but the fact remains that many are better for the use of a little good wine, taken with one meal in the day. There can be no universal rule as to the kind or amount. Most varieties of malt liquors are harmful to gouty patients and one of the earliest symptoms of the onset of the gouty habit is the inability to digest even small quantities of malt liquor. In short, both the food and drink of each individual patient must be studied and put upon a rational basis. The level of health must be raised by every method available. Many commit no indiscretions in diet but their general tone is low and an improved and adjusted diet is helpful. The class of persons who live sumptuously with practically two dinners daily require other treatment. Relief will come not so much by omitting this or that article of diet as by a daily and systematic reduction of the whole amount consumed. What has especially to be forbidden is richly seasoned, greasy and twice-cooked food. Strong soups, cooked tomatoes, rhubarb, foods cooked with fat or sugar, large, mixed meals of animal and farinaceous foods, together with fruit and wine—all these are gout-provoking. Variety is apt to lead to excess. We have, in truth, many articles to select from, but the keynote of our prescription should be strict moderation in all or any one of them.

PHYSIOLOGY.

New Researches on the Physiology of the Salivary Glands.—A study of the temperature relations of the salivary glands was made by R. Burton-Opitz (Pflüger's Archiv, July 6, 1903) in order to differentiate between the special influences exerted by the cerebral and sympathetic nerve-fibers upon glandular activity. According to Heidenhain, the chord a tympani contains fibers that influence the secretion of water and salt, while the sympathetic contains fibers that are concerned with the secretion of the organic constituents of the saliva. If this be true, then the rise of temperature in the glands during their activity (as observed by Ludwig) would, other things being equal, be the greater in the case of sympathetic stimulation, in which presumably the elimination of the organic constituents would give rise to more heat than the elimination of the inorganic bodies. With the view of determining the truth of this conclusion, Opitz conducted a series of experiments on dogs in which he measured by means of the electrothermometer, the temperature changes that occur in the submaxillary gland during stimulation of the chorda tympani and the sympathetic. He found that in the case of the stimulation of the former, the temperature-rise is the greater, and that a greater amount of saliva results in this case than in the case of stimulation of the sympathetic. If the stimulation of the sympathetic is made relatively so strong and of the chorda relatively so weak in two experiments, that the resulting secretions are approximately of the same volume, there is still, without exception, a greater rise of temperature in the case of stimulation of the chorda, which in the average is always three times as great as the temperature in sympathetic stimulation. Whether the salivary flow is produced by a stronger current of shorter duration or by a weaker current of longer duration, has nothing to do with the resulting rise of temperature. This is also not influenced by the clamping of the glandular artery during the experiment. These results apparently contradict the inference that might be drawn from Heidenhain's hypothesis of the specific activity of the two kinds of nerves. Another stage in this inquiry was to determine what histological changes, if any, occur in the submaxillary gland as the result of section of the chorda tympani and sympathetic respectively. This phase of the subject was studied by U. Gerhardt (Pflüger's Archiv, July 6, 1903). Macroscopically there was noticed a shrinking of the gland following section of the sympathetic, and still more following section of both sympathetic and chorda. The microscopic changes following section of the sympathetic are as follows: In the case of preparations of the submaxillary gland made after killing the dog a long time (16 weeks) after the operation, there is noticed a progressive shrinking of the nucleus of the cells and a thickening of the chromatin, and these changes are noticed not only in the side on which the nerve has been cut, but also on the other side as well. On the other hand, section of the chorda is never followed by the above nuclear changes but by distinct alterations in the protoplasm, giving rise to two different kinds of cells. In the one the normal protoplasmic structure acquires a distinct network, in the other a finely granular and opaque appearance; the nucleus is unchanged. In the gland on the non-operated side the cells are not affected. The changes following the two forms of section do not affect all the cells of the gland, there being no rule by which some cells are changed while others are not. The above phenomena indicate that the innervation of the salivary glands is an exceptionally complicated one. No adequate explanation of the causes of these changes is forthcoming. It is probable that the different parts of the cell are innervated in different ways and to a varying degree, and that the glandular fibers of the sympathetic nerve on one side in some way reflexly influence the secretion of the gland on the other side of the body.

Blood Sugar and Liver Excision.—It has been taught on the basis of experiments performed by Bock and Hoffman, that when the liver is cut off from the circulation the sugar of the blood quickly falls and disappears altogether within three-quarters of an hour. F. W. Pavy and R. L. Sian (Jour. of Physiol., June 15, 1903) find in agreement with other recent investigators that the above is not true, for after the lapse of some hours the lowest point reached by the sugar is about 0.5 per cent. There is also a great irregularity in the amount of fall in different experiments and in the rate of fall at different periods of an experiment. The quantity of sugar lost, looked at as a source of energy, is too insignificant to have, from this point of view, any physiological import.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Carcinomatous Change in Papilloma of Colon.—The so-called mucous polypi of the large intestine are usually thought to remain benign throughout life, and even Hausmann, in his work on the history of intestinal cancer, does not mention the polypus as a site of origin for malignant growths. Smoler allows that exceptionally the polypi may undergo cancerous degeneration. It is thus of importance that E. R. Forster (Rev. Méd. Suisse, Aug. 20, 1903) is able to report two

cases. In the one, a case of pulmonary tuberculosis, the intestine contained two benign polypi and a polypoid tumor with recently developed areas of carcinoma. In the other case there were many pedunculated tumors in the colon, the smaller of which were smooth and the larger cauliflower-like, and showing under the microscope an increase in number and size of the gland cells. In the rectum is a typical adenocarcinoma surrounded by polypi. The ages of the patients were thirty-two and twenty-nine years, respectively. Beach claims that the adenoma with long peduncle is always benign, while that with short pedicle tends to become malignant, but in the author's second case there was evidence of irritative and beginning malignant change in both long and short pedicled polypi.

Disturbances in the Development of the Kidney.— E. MEYER (Virchow's Archiv, Vol. 173, No. 2) had occasion to examine a peculiarly spotted kidney of a girl, nine weeks old, with a number of congenital defects (cleft palate, uterus bicornis, atresia ani). In some parts the renal tissue was of normal structure, in others, however, the convoluted tubules were absent. This observation makes it seem probable that the canal-system of the kidney is developed from two distinct germs. A study of the spotted kidneys of calves and the cystic kidneys of children confirmed the view that the latter are due to disturbances in development. The parts which do not attain full development may later give rise to tumors.

Chemical Individuality and Chemical Malformations. — Although comparative physiological chemistry is still in its infancy, according to A. E. GARROD (Pflüger's Archiv, July 8, 1903), yet there is no doubt that the various species of animals and plants differ in their chemical structure and in the products of their metabolism, to the same extent in which they differ in their anatomical structure, and in their form. One need only refer in this connection to the difference in the constitution and crystalline form of the hemoglobin of various animals, to the non-identity of the biliary acids of different species, as well as to the formation of specific metabolic products, as that of kynuretic acid in dogs. There are different respiratory pigments in the lower animals, serving the same function as hemoglobin. One observer has been able to classify certain butterflies in a new genus by discovering that the pigment of their wings was, unlike that of similarly colored butterflies, derived from uric acid and its derivatives. The facts of hemolysis, agglutination, etc., show how easy it is to classify animals with respect to the mutually antagonistic phenomena of their serum, in distinct species. The phenomena of natural immunity, and the peculiarities in the action of drugs and poisons on animals of different genera and species, all point to innate chemical differences. Moreover, it is well known that individuals of a single species differ from one another in form and structure, and it is logical to assume the presence of similar chemical variations. That such variations exist is proved by the results of artificial selection, for instance, the improvement of the sugarbeet; and the results of natural selection, as the development of the colors of the breeding-season in birds and the wintry coat of arctic animals. Of more immediate interest is the variation in the elimination of uric acid in healthy men under the same conditions of life and nutrition. Ocularly more evident is the variation in the color of skin, hair, and eyes in different individuals. If one seek fundamental chemical differences, these can be found in the greater or less susceptibility to infection and in the idiosyncrasy toward certain drugs and poisons possessed by different races and families of men. Just as the individuals of a single species agree with one another in the general anatomical structure, while a few present certain anomalies, such as supernumerary fingers, so in their chemical behavior, while the majority may agree so far as the general traits are concerned, yet a few may present certain anomalies of metabolism. As examples of such chemical anomalies, one need only mention albinism, alcaptonuria, and cystinuria. Albinism is undoubtedly inherited, lasts the entire life, and while not directly dangerous, compromises sight by virtue of the absence of pigment in the choroid. It sometimes occurs in several members of the same family, more commonly in the males, and is only seldom directly transmitted from parent to child. A large proportion of Albinos are the offspring of consanguineous parents. It is certain that albinism is founded on a chemical basis, for it depends upon the deficiency in the formation of melanins, normally present in the skin, hair, and eyes. Of significance in this connection is the recent discovery that the integumentary pigments are decomposition products of tyrosin, produced by the action of a specific ferment, tyrosinase in the intestine. The peculiarities of albinism gain in importance when compared with another chemical anomaly, namely, alcaptonuria, of which already 40 cases have been recorded. This condition depends upon a disturbance of the intermediate metabolism of albumin, resulting in the appearance of an abnormal constituent in the urine, namely, homogentisinic acid. It has been shown that tyrosin is one of the mother-substances of this acid, and, more lately, that phenylalanin is one of its antecedents. In the majority of cases alcaptonuria is inherited, continues throughout life, and in certain cases has been traced back to the beginning of life. It is usually discovered only by the appearance of dark stains in the patient's linen, otherwise it gives no symptoms. There is such a striking likeness between the pictures of albinism and alcaptonuria that it is difficult to avoid the conclusion that both conditions are controlled by the same laws. Like albinism, alcaptonuria appears more frequently in males than in females; it may appear in brothers and sisters in the same family, and only in one known case has it been directly transmitted from parent to child. The majority of the cases are the children of consanguineous parents. Cystinuria is a third example of chemical malformation, and, like the others, it is very rare, occurs more commonly in males than in females, is very seldom inherited, and may occur in both sexes in the same family. Of any possible blood-relationship of the parents, as yet little is known. In this connection the article by Abderhalden, recently abstracted in the MEDICAL NEWS, on the chemical pathology of cystinuria, is of extreme interest. This condition likewise appears to be a disturbance of nitrogenous metabolism, but its nature is not yet entirely clear, as, in addition to cystin, considerable quantities of cadaverin and putrescin are eliminated. Unlike the other anomalies, cystinuria cannot be regarded as a harmless affection, but the disturbances that accompany it are of a secondary nature, and have nothing to do with any metabolic derangement. The frequency of chemical anomalies in the children of first-cousins, which seem not to be confined to the three forms above described, merits a special inquiry. In this respect one finds a particular importance in the observations of Von Noorden on the early development of diabetes in several children of consanguineous parents. All these anomalies can hardly be attributed to the mere fact of blood-relationship, but rather to the circumstance that such relationship favors the heaping-up of certain latent tendencies in the family, which ordinarily do not manifest themselves.

Diagnosis of Myelogenous Tumors.—The possibility of diagnosing a myelogenous tumor before any characteristic symptoms have developed, by microscopical examinations of the blood, is suggested by E. Bloch (Deut. med. Woch., Vol. 29, No. 30). He presents details of a case, a man forty-one years of age, who developed symptoms suspicious of a spinal neoplasm. The blood showed an abundance of myelocytes, which seemed to indicate that the bone marrow was under the influence of some irritation. In addition the spleen was found to be unusually large and soft, and there was a rise in temperature. Subsequent autopsy showed that a large spindle-celled sarcoma was present, which had evidently originated in the vertebræ.

Clinical Tests for Urobilin.—The following new facts in the determination of this substance in urine are reported by W. Schlesinger (Deut. med. Woch., Vol. 29, No. 32). Fluorescence and distinct bands in the spectrum may be seen, if an equal amount of a 10-per-cent. alcoholic solution of zinc acetate is added to the urine and the precipitate filtered. Even a small proportion of urobilin in the urine responds to this test, while otherwise the bands are usually masked by the presence of other pigments. The reaction is disturbed by hemoglobin and a modification of the test is necessary. To 1.5 c.c. of a .7 per cent. saline solution is added enough potassium oxalate to form a 1 per 1,000 solution, when the same amount of blood is added. The latter, 1.5 c.c., is freshly drawn from the finger. The oxalate prevents the coagulation of the blood, but does not disturb the reaction. The tube is then placed in the centrifuge and the clear fluid poured off. An equal amount of the 10-per-cent. zinc acetate solution is added and the mixture again placed in the centrifuge. The supernatant fluid is then examined for the fluorescence and the spectrum bands.

Differentiation of Blood Plates by Staining.—A contribution to the subject of the properties and origin of these elements has lately been made by K. Preisich and P. Heim (Deut. med. Woch., Vol. 29, No. 33). In slides stained by Romanowski's method, somewhat modified, they claim to have established that the blood plates are nucleated formations of the red cells, thrown out by the latter into the circulating blood. In many cases they found that the red stained plates were still contained within the red cells which had been stained blue. In diseased processes where there was a marked regeneration in the number of red cells, the number of blood cells was correspondingly increased. In pernicious anemia, on the contrary, the number was lowered. Plates were also found in some cases within the phagocytes and the granulations in the latter may be merely the remains of the blood plates, which had been enclosed by these cells. They seemed to be identical in size, staining qualities and other ways, with the granulations of the blood plates.

On the Plurality of Cytolysins in Normal Blood Serum.—For the purpose of determining the existence in normal blood serum of cytolysins for other cells than red and white corpuscles, a series of experiments have lately been conducted by S. Flexner and H. Noguchi (Univ. Penn. Med. Bull., Vol. 16, Nos. 5 and 6). Sera from necturus, rattlesnake, dog, and ox were used and the results demonstrated the occurrence in it of solvents for a wide variety of animal cells. This fact having been established, the specificity of the solvents for the different cells was determined. The removal of a part of the solvents by means of certain cells does not prevent action of the treated serum upon still other cells, from which it could be concluded that the solvents are at least specially adapted to given cells; while a general reduction in activity of the serum which has lost a part of its solvents would also suggest that these are not specific in the strict sense. The mechanism of the solvent action is probably identical with that of serum hemolysis, and depends upon the interaction of amboceptors and complements. That the amboceptors are multiple in each serum would seem to be proven by the absorption tests; but whether the complements are also multiple has not been considered. It is highly probable that they are. The same line of experiments has also been pursued with snake venom. Observations were made on various animal cells, exclusive of red and white corpuscles, obtained from a large variety of both warm and cold-blooded animals. It was found that venom contains solvents for the parenchymatous cells of several animals, and that considerable differences in activity in this respect occur according to the source of the venom. Analysis shows that the venom is very complex and the solvent action on different animal cells is not due to a single substance, but to a number of principles, which are distinct from one another. It was also shown that the solvent for any given cell of one animal may be abstracted from the venom by absorption without removing the active agents for the same kind of cells belonging to another animal species.

The Cytoryctes Vaccinæ.—The appearance and evolution of the parasite of vaccinia—called by Guarnieri cytoryctes vaccinæ—are described by M. G. Lebredo (Rev. Méd. Cubana, August, 1903) as seen by him after introduction of fresh vaccine into incisions in the cornea of rabbits. Within forty to seventy-two hours after inoculation—the animal being killed, eyes extracted and prepared for microscopical examination after the manner described by the author—a nucleus, surrounded by a lighter areola may be seen within the protoplasm of the infected epithelial cells of the cornea. This body is the cytoryctes vaccinæ. At times it may appear to be within the nucleus of the corneal cell, but, according to the author, careful focusing shows it to be simply lying upon it. Again the parasite may appear to lie outside of the cell; but this, he believes, is due to section of the cell by the microtome in such a way that the parasite is separated from the cell. The various phases in the evolution of the germ are described as follows: The round body with its central point, presumably of chromotin, at first increases in size, then assumes an ameboid form, with pseudopodia, and lastly undergoes subdivision into numerous young parasites which, freed from the parent by rupture of the host-cell, seek another cell and undergo the same changes. It is not possible, however, to observe the successive cycles in the corneal cells of the rabbit, as by the time one cycle is accomplished the cytoryctes are masked by a secondary infection or disappear either by reason of the limited field of infection or the abundant phygocytosis occurring seventy-two hours after inoculation. The author states that both variola and vaccine when introduced into corneal incisions cause the appearance of the same parasite. Such inoculations with variola the author believes to be of practical diagnostic value; as inoculations with other infective forms are negative in result.

The Effect of Bacteria in Dissolving Nucleins.—The sodium salt of a nucleic-acid, either dissolved in position of the nucleic acids, suggested to Prof. A. Kossel the question whether certain bacteria grown on nucleic-acid as a culture medium, might not have a dissolving action on the latter in the same way as they dissolve gelatin. In order to answer this question a research was conducted by H. Plenge (Hoppe-Seyler's Zeitschrift, July 31, 1903), with the following results: The sodium salt of nucleinic-acid, either dissolved in distilled water, or in 5-per-cent. salt solution, or in a

bouillon of meat juice and pepton, in a concentration of 2.5 to 5 per cent., is capable of acting as an excellent culture medium for bacteria, and equally as well for puncture as for smear and plate cultures. This culture medium can be made perfectly transparent. The various micro-organisms do not exert their dissolving action on gelatin and the sodium salt of α nucleic-acid in parallel degrees; in many cases there is probably present in the bacterium an enzyme specially directed against the nucleic acid. It appears that the respective behavior toward this acid affords a new basis for the differential diagnosis between *Bacillus coli* and *Bacillus typhosus hominis*. Two different cultures of typhoid bacilli dissolved the nucleinic acid salt much more energetically than a culture of *Bacillus coli*. This acid furnishes an aid in classifying the bacteria and studying their natural history, and also a means of more closely studying the nature of the proteolytic ferments.

HYGIENE.

Protection Against Sunstroke.—The very interesting article of P. Schmidt (Arch. f. Hyg., Vol. 47, No. 3) deals with the protection the tissues of the head and the various articles generally worn afford against the direct rays of the sun. The entire skull, inclusive of a thin layer of hairs, is permeable for thermic as well as actinic rays. Cerebral tissue is relatively less diathermous, so that the cortex absorbs most of the rays. Anemic blood is much more diathermous than normal blood, and this explains why patients with malaria are more subject to sunstroke. It is hardly probable that the ultra-violet rays cause sunstroke; it seems more likely that the heat- and light-producing rays are responsible. White skin allows these rays to pass through about twice as readily as negro skin. Straw hats and white caps without lining are a very poor protection; the so-called tropical helmet is a much better safeguard. The value of the various cloths used in the tropics could not be decided.

NEUROLOGY AND PSYCHIATRY.

Some Elements of Metabolism in Epilepsy.—Impressed with the contradictory results reported from analysis of the urine of epileptics, G. Sala and O. Rossi (Gazz. Med. Lombarda, Aug. 16, 1903) undertook the study of the urine during a period of from one and a half to two months in each of five epileptic patients; examinations of a given quantity of the urine eliminated during twenty-four hours being made daily. The diet was so regulated in each case as to establish metabolic equilibrium. The authors tabulate their findings as follows: (1) The quantity of urine was normal in the majority of cases; (2) the color varied from straw-color to golden; (3) the specific gravity was always high, even when an increased quantity of urine was eliminated; (4) acidity was normal, or slightly below normal; (5) phosphoric acid varied within normal limits; (6) the amount of urea corresponded to that considered as medium by authors in general, but it was less than that which should have been eliminated with the diet given; (7) the quantity of chlorides was generally above the normal, though at times it reached the normal. No connection was apparent between the variations in these elements of the urine and the occurrence of epileptic seizures. An increase in indican was always seen the day following a seizure. Not the faintest trace of albumin was found after an epileptic seizure, whether this was repeated or not.

Pathogenesis and Prognosis of Tabes.—In the opinion of M. Faure (Jour. de Méd. de Bordeaux, Aug. 16, 1903) syphilis does not play the important part usually assigned to it in the causation of tabes. Other infections and intoxications or simply physical or moral shock, mental strain, or privation must be considered as etiological factors in the disease. Though the majority of tabetics have suffered syphilitic infection, the symptoms of tabes first appear in many such subjects after other infections and intoxications. It may be said that in 60 per cent. of the cases, no matter what the treatment, tabes is arrested in the early stages; or its evolution is so slow that its effect upon the duration of life is very slight. In but 30 per cent. does the disease progress so rapidly as to justify the grave prognosis formerly given in this condition. Five per cent. of the cases are clinically cured, while a like number progress rapidly and fatally, and their course is marked by fever and symptoms of infection. This febrile form of tabes has not hitherto been described, and runs a short course of a few months to two years.

THERAPEUTICS.

Colloidal Oxide of Bismuth in Digestive Disturbances of Infancy.—Colloidal oxide of bismuth is tasteless, readily soluble in water and contains 20 per cent. of metallic bismuth. It is to be preferred to bismutose tannigen and tannalbin, since it can be given in solution and never appears unchanged in the stool. Kinner (Münch. med. Woch., July 21, 1903) has employed it in a number of cases of gastro-enteritis in children, complicated by scrofulosis, rachitis and pneumonia, and speaks of it with quite some enthusiasm. The treatment begins with gastric and rectal lavage, and thin tea or albumin water internally. Then three or four daily doses of 5 cubic centimeters of a 10-per-cent. solution in expressed mother's milk or diluted cow's milk are given. The stools soon become more consistent and grayish-green, and the children will rapidly get over their acute attack and gain in weight. For chronic disturbances, with atrophy and swelling of the mesenteric lymph-nodes, the preparation is useless, like most other remedies. Gastric irritation was never observed, even after prolonged use.

The Treatment of Purulent Wounds With Pulverized Solutions of Soda and Sodium Benzoate.—The successful application of warm soda compresses over purulent wounds attracted the attention of Zwetayeff (Prakt. Vrach, No. 20, 1903) some time ago. The wound is first thoroughly washed with boric acid or bichlorid, and after dusting it over with airol, xeroform or iodoform, a compress of sterilized gauze saturated in a five-per-cent. solution of soda is placed over it; the whole is then covered with cotton and oiled silk. In abscesses that require opening, the cavity is filled with gauze saturated with a five-per-cent. solution of soda and covered in the above way. In beginning suppurations several incisions are made throughout the length of the affected tissue and the same compress is applied. Not only were there no complications, but the healing was rapid and uneventful, usually after the fourth or fifth compress. Further observations induced the writer to utilize the benzoate of soda in pulverized form before the application of his compress. Five cases, including three capital operations, are brought forward to illustrate the writer's contention.

Empyroform, A New Tar Preparation.—This substance, lately introduced, has been given a thorough trial by A. Kraus (Prager med. Woch., Aug. 13, 1903), who finds it of especial value in skin diseases, particularly those of an eczematous character. It is a fine dark-grayish brown powder, produced by the condensation of oleum rusci (oil of tar) and formaldehyde. It is insoluble in water, ether or alcohol, but readily so in acetone, caustic alkalies and chloroform, and has very little odor. It may be best applied in the form of a five-per-cent. ointment composed of vaseline and lanoline.

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MEETING OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

THE semi-annual meeting of the Medical Society of the State of New York, which was held at the Academy of Medicine in this city during the present week and an account of the proceedings of which will be found on page 757, was very fully attended and proved a series of interesting sessions. Dr. Deaver's paper on Hepatic Drainage, on the morning of the first day, served as the nucleus for a symposium on our present knowledge of the surgery of the biliary tract, that reflected recent progress of American surgeons in this field of activity. On the morning of the second day, Dr. Dawbarn's paper, on the Technic of Operations Upon the Tongue, shared the same distinction and brought out a variety of interesting opinions with regard to practical methods in these difficult surgical procedures, which show how thoroughly New York surgeons are keeping abreast of the times. The announced symposia on the Roentgen Rays and Typhoid Fever, which occupied both the afternoon sessions, brought out some valuable contributions to our present knowledge of these important matters.

The address of the Hon. William W. Goodrich, Presiding Justice of the Second Department of the Appellate Division of the Supreme Court of New York State, marks an interesting epoch in modern fraternization between the medical and legal professions. There is no doubt that the members of the two professions can be of great service to one another by mutual discussion of recent advances in medicine in their relations to present-day applications of legal principles. As an exemplary initiative in the matter rapprochement could have no better representative than Presiding Justice Goodrich, whose well-known dissent from the prevailing opinion of the Appellate Division, when it reversed the condemnation of a faith healer in this State, has just been confirmed by the Court of Appeals reversing the decision of the majority of the Appellate Division, thus upholding Presiding Justice Goodrich's opinion. Justice Goodrich's paper on the legal status of the Roentgen rays, laid down very explicitly the legal principles on which Roentgen ray skiagrams become formal evidence, and also made clear what are the dangers of malpractice suits with regard to injuries produced during the employment of the X-rays.

The special meeting of the Society, held on Tuesday evening, considered particularly the question of reunion of the present State medical organizations. The proposal to continue the former committee on reunion, giving it power to do whatever it considered necessary to bring about this reunion was voted unanimously. The sentiment of all those present was very evidently in favor of the corporate union of the two present medical organizations, as soon as possible.

Now that the committees appointed by both the Society and the Association have full powers in the matter, it is only a question of very short time until union shall be effected. The members of the committee appointed by both organizations are men whom the medical profession of this State can depend on to do everything in their power to put an end to the present unfortunate division of medical organizations and professional interests for which there is no longer any good reason. We hope to be able to announce within the next month, certainly before the end of the present year, the definite reunion of the New York State medical organizations.

PATHOLOGY OF A PROPHET AND HIS FOLLOWERS.

NEW YORK city is having the experience of being evangelized by the new Elijah, John Alexander Dowie who, after much-heralded prepara-

tion, has come among us with the idea of turning our unregenerate citizens from the errors of their ways toward Dowieism and the new Zion.

There are not wanting those who find the motive for this sudden interest in the spiritual condition of New York city in what the New York *Times* described editorially, one morning last week, as the fact that "he has already worked the credulity of Chicago and its more or less immediate neighboring regions for all they were worth and now feels the need of broader fields to cultivate."

The results thus far obtained by the new prophet in New York serve to show that very probably he is not going to have quite as much success as he fondly anticipated, or, at least, assured his credulous Western followers who so liberally supplied him with the sinews of war for this campaign among the benighted heathen of the East. In the fact that many thousands have been attracted to him out of mere idle curiosity, though not a few of those who went to scoff apparently remained to pray or the equivalent of that act of worship, according to the tenets of Dowieism, there is food for not a little reflection Physicians cannot but learn to realize from the contemplation of a spectacle like this how narrow is the line dividing sanity from insanity, especially in the matter of religious persuasion, where depths of emotion are involved.

"Half the world is off and the other half is not quite on," is the expression of an American philosopher, but its jocund exaggeration enforces a great truth, the application of which is never more evident than in the midst of a movement like this. There are always to be found an abundance of people ready to take up with the latest religious fad, no matter how absurd it may be. That such people may be rational from other points of view is perfectly clear from the fact that many of them have had the business instinct and commercial ability to amass considerable wealth, so that the leader or leaders of the new religious movements rapidly accumulate riches. Mrs. Eddy's fortune and the handsome edifices for public worship after the Christian Science fashion, which have been built in recent years on prominent avenues in New York city are quite conclusive evidence of this. Dowie's wealth and the elaborate and expensive preparations made for the two weeks in New York, which included an advance check of $14,000 for the use of Madison Square Garden for fourteen days, supply confirmatory evidence if it is needed.

As to the leader of the movement himself there seems no good reason to doubt that he is sincere in most of his professions. He is one of the cases of conviction of reincarnation that are so common among the insane that every asylum in the country has some examples of it. With this fixed idea become a ruling passion there is combined a capacity for business and the administration of affairs, a positive genius for organization and withal a persuasiveness of language and a magnetism of personality that makes the possessor of these heterogeneous qualities a most interesting subject for study and painstaking investigation. If the community generally should be brought to the realization of the true nature of the movement as a phenomenon of mental pathology much would be accomplished in making public opinion truer in the matter of the appreciation of mental disequilibration generally, especially as regards legal complications.

Even more interesting than Dowie himself as a pathological study is the number of his followers who are aiding him in the cause and who present in supreme variety the earmarks of the mentally disequilibrated in all degrees. Of course, not all of the converts are sincere and some, as in the case of many a Christian Science healer, find an opportunity in the latest religious fad to make a living easier than has ever been possible for them before. Many are in fact the failures in life at all ordinary occupations who must make their living by exploiting others, but not a few of the missionary assistants and followers are as sincere as it is possible for men and women ever to be and are striking examples of the possibility of the communicability of illusions,—a fact that has occupied such a prominent place in history. For there is for susceptible minds, those that lack resistive independent vitality, quite as much danger of the contagion of ideas as for bodies in like conditions there is of infection by bacterial agents. Community of illusion and delusion is a fruitful feature of all alienists' work.

Needless to say, religion is not the only subject in which such self-deception and a communication of influence is possible, though it is in this field, as the ready following obtained for Theosophy, for Buddhism, for Spiritualism, and for Babism attest, that the fostering of delusion is easiest. All are interested in the presumedly spiritual side of things and lend themselves readily to persuasion. Where other subjects are popular, however, there may be quite as remarkable though not as widespread, a manifestation of the

tendency so common in humanity to accept its thinking from others. Many a system of philosophy has gained its following because of this fact and among the so-called educated classes many of the literary fads are little better than the index of the custom of dependent minds accepting their ideas from others.

Our visiting evangelist and his disciples promise to be of distinct service in pointing out in its most exaggerated form the tendency of the generation to look for a leader in its thinking. Much may well be learned of psychical contagion, its conditions and its limitations. Meantime there is no doubt that the religious emotivity aroused by the new prophet will be a sure source of danger to many weak, but under ordinary circumstances fairly balanced minds, and it should be the duty of family physicians especially to warn other members of families where such persons exist of the danger there is for them in the movement. Prophylaxis here may prevent an actual outbreak of insanity, as the result of religious excitement, and once this has actually occurred its chances of recurrence are very strong. In a word, the situation has many interesting and important medical features of practical as well as theoretical significance and medical men must not miss their inward meaning.

ECHOES AND NEWS.

NEW YORK.

The Kings County Medical Association.—A stated meeting of the Association was held on Tuesday evening, October 13. The professional paper of the evening was upon "The Spectroscopic Elements of Light as Therapeutic Agents," and was read by Dr. George G. Hopkins. The discussion was by Drs. Andrew H. Smith, William James Morton, Samuel Lloyd and A. D. Rockwell, of Manhattan.

Police Surgeons' Appointments.—Taking advantage of the authority vested in him under Section 202 of the charter, Police Commissioner Greene has removed Dr. Stephen G. Cook, as President of the Board of Police Surgeons, and has appointed in his place Dr. E. T. T. Marsh. He has also appointed as secretary of the board Dr. Henry P. De Forest. Commissioner Greene said the change was made to increase the efficiency of the board. No extra pay attaches to the positions, which are entirely honorary. The police surgeons have been in the habit for years of electing their own president. Dr. Marsh is surgeon of the Seventy-first Regiment and a friend of Commissioner Greene of long standing. He received a medal and honorable mention from Commissioner Partridge for heroic service at the Park Avenue Hotel fire, where he saved the life of a guest. Dr. De Forest was appointed a surgeon only a short time ago by Commissioner Greene.

New Gouverneur Plans.—As Chairman of the Board of Trustees of Bellevue and Allied Hospitals, Dr. John Winters Brannan applied to the Board of Estimate and Apportionment last week for an appropriation of $317,075, to defray the cost of a new wing and extensive alterations to Gouverneur Hospital, at Gouverneur Slip and Front street. The plans for the alterations and additions have been submitted to the Bureau of Buildings, and have just been approved. When an appropriation of $125,000 was requested by the Board last spring, it was intended simply to erect a new wing, but a close examination of the conditions in the old building showed that a mere enlargement of it would be inadequate to meet the demands of the situation. The completed plans of the architect, Raymond F. Almirall, provide for the alteration and rearrangement of the interior of the old building, the addition of the new wing, a new morgue and autopsy room, a new ambulance house and stable, and a driveway in the courtyard for the service of the ambulances. The design indicates a finely equipped, complete, and up-to-date hospital. There is provision now in the hospital for about ninety beds, and, with the additions and alterations, this will be increased to about 140 beds. Practically no diet kitchens exist in the old building, and these will be supplied for all the wards. In the old building the accessory rooms to the main operating room are altogether insufficient. A surgeon's dressing-room, etherizing room, sterilizing and bandage room, and recovery rooms will be supplied. It is believed that the work can be completed within eighteen months.

New Sanitary Code.—Of the various reforms instituted by the Board of Health under Dr. Lederle, there is one of far-reaching importance which has received but little attention. This is the entire revision and rearrangement of the Sanitary Code, copies of which were recently distributed. Revision was made necessary by the fact that the vigilance of the health inspectors often proved fruitless because many important sections of the old code were hopelessly involved and could not be interpreted clearly by judges. Violators of the city's health laws were often discharged in court owing to this cause, and the work of the department was thus seriously handicapped. The revision included the addition of new and important sections, the rewriting of nearly all the old ones, and the placing under their proper headings of ten sections that had been added from time to time. A comparison of the old and new codes will readily show some of the most important changes. Section 26 of the old code required all lodging houses to obtain a permit from the Department of Health, and when strictly interpreted this ordinance could be construed to cover first-class hotels, while it was intended really to apply to buildings like Bowery lodging-houses, which have dormitories containing a large number of beds. The ordinance was therefore altered to read "for all lodging-houses . . . containing rooms in which there are more than three beds for the use of lodgers, or in which more than six persons are allowed to sleep, a permit from the Board of Health shall be required." Section 27 provides that no change shall be made of the drainage, sewerage, or the sewer connections of any house or premises involving similar changes in other houses, unless at least thirty days' notice shall have been previously given to the Department of Health and to the owner of the premises affected. The old ordinance did not require notice to be given to any but the health inspectors, and as a result much inconvenience was caused to householders whose private sewers were stopped up or broken into by their neighbors. The new code regulates street sales of foodstuffs much more efficiently than the old. The

Tenement House Department discovered that cellars were being used as stables for pigs and goats, and this has resulted in an ordinance to prevent the use of a cellar as a stable for horses, cattle, or other animals, without a health permit. Offensive odors arising in slaughter-houses from the handling of meat and treating of offal must now be condensed, and not allowed to escape into the outside air, and in the built-up portions of the city every stable must be connected with the street sewer in front of the building. The smoke ordinance has been amended to cover the discharge of smoke from locomotives, while that part requiring the use of smoke consumers has been eliminated. The Board of Health cares not how factories and buildings consume smoke, so long as it is consumed without annoyance to the public. To prevent the spread of contagious diseases among animals, owners who destroy horses or other animals affected with glanders or farcy must notify the department of the place, destruction, and the disposition of the body. Dead horses, before they are placed in the street, must have a tag attached giving the name and address of the owner, and particularly of the stable. These two sections are new, and are intended to enable inspectors to trace the source of diseases. Dogs or other animals showing symptoms of rabies may, under the new code (section 132), be surrendered to the department for inspection and observation, and if found rabid may be destroyed. Under the provisional classification of infectious diseases are arranged a number of diseases which, before the new code was compiled, were not reported by doctors or hospital superintendents. In cases of influenza, pneumonia, parasitic diseases of the skin, cholera infantum, etc., reports are not asked for with the view of exercising a sanitary surveillance, but only for the purpose of obtaining information with a view to the ultimate removal or improvement in the conditions which now foster them. "Notification," the code says, "is required in certain of these diseases because of the liability of their extension among the children in schools."

Death of Dr. Franklin.—In accordance with a resolution, unanimously passed at a meeting of the Harlem Medical Association on October 7, 1903, the undersigned respectfully present the following preamble and resolutions on behalf of the Harlem Medical Association:

Whereas, by the inscrutable ways of a Divine Providence we have lost in the death of Doctor David Franklin, one of our most loyal, conscientious and faithful members, for many years the treasurer and a trustee, and at one time President of the Harlem Medical Association, therefore be it

Resolved, that we enter upon our records this minute of our lasting regret at his untimely death, and our deep appreciation of the manly traits of his character which endeared him to all. Doctor Franklin was known to us as a model of quiet patience, perseverance and determination of character, and as one of nature's noblemen; a skilful physician, a cheerful councilor, and a loyal friend. As a physician he was thorough, clear-headed and scientific, studying each and every case intrusted to his care with the patient minuteness of detail so requisite, and his large and successful practice bears every evidence of the success that follows such painstaking attention. His faithful service as physician to the Orphan Asylum for twenty years, abundantly shows his unswerving attention to duty. Not only were his services eagerly sought by those suffering, but he became endeared to those who knew him, and his counsel was often asked and as eagerly accepted, as it was cheerfully given. As a friend he was all that the name implies, ready to respond to any call made upon him, self-denying and self-effacing, tried, faithful and true.

Although taken from those who loved him at the very zenith of his career, when there was every reason to believe that there was a future of happiness and fame awaiting him, his all too short life brings to us all a lesson we may profit by. We shall ever bear him in fond remembrance and place this record of his manly, loyal, consistent, gentle and true character upon our records, as they are engraven in our memories. Emil Mayer, M.D., Chairman; Richard van Santvoord, M.D., Montrose R. Richard, M.D., Committee.

PHILADELPHIA.

Removal of Dr. Laws.—Dr. William V. Laws has lately removed from Philadelphia to Hot Springs, Ark., where he has become associated with Dr. T. E. Holland, both in private practice and as physician to the Ozark Sanatorium.

Bribery Charges Denied by Osteopaths.—The reported statement of Dr. William Smith, of St. Louis, that the bill to regulate the practice of osteopathy might have passed the legislature of Pennsylvania at the last session if money had been used, is not credited here or in Pittsburg by members of the legislature or by osteopaths. Smith claims to know of an offer of the votes of eight members of the Pennsylvania Assembly for $1,800. The statement cannot be substantiated by those referred to by Dr. Smith. The bill was fought by both allopathic and homeopathic schools and never had a chance to pass.

Vaccine Physicians Receive Instructions.—Considerable complaint against certain vaccine physicians has been the cause of personal instruction to the physicians regarding the vaccination of school children by Director Martin. Special emphasis was put upon the right of parents to keep their children in school if they are provided with certificates of vaccination, however long a period may have elapsed since the operation was performed. The system of employing physicians outside the department of health to perform vaccination was condemned by Dr. Martin as tending to encourage an annoying excess of activity on the part of the vaccine physicians who receive forty cents for each person vaccinated. Dr. Abbott, Chief of the Bureau of Health, is in favor of revaccination of public school children every five years.

State Medical Society and Temperance.—The action of the State Medical Society at the recent meeting in York in turning down the report of the committee on the examination of school text-books is taken by some to mean that the society endorses the books which were condemned by the committee. This idea is entirely erroneous as the members of the society were heartily in favor of the principle embodied in the report. The personnel of the committee and the statements employed were in some ways objectionable and hence the failure to endorse its report. The entire committee was therefore discharged and later an entirely new committee, having the same purpose in view as the older one, was appointed by the new presiding officer. The work, therefore, will be continued, and the exultation of some of the advocates of the books in question has been entirely premature.

Three Cases of Perforated Gastric Ulcer and One Case of Perforated Duodenal Ulcer.—This interesting series of cases, all operated upon during the present year, were reported at the recent meeting of

the Academy of Surgery by Dr. John H. Gibbon. The first case, that of a boy of eighteen years, was notable because the symptoms pointed to appendicitis, and operation was undertaken for the relief of that condition. The true state of affairs was found, however, and recovery followed. Two of the patients were nourished during the three weeks subsequent to operation solely on rectal enemata of malted milk, four ounces every four hours. This method gave very satisfactory results. One patient died from general peritonitis which developed after operation was advised and refused. In the discussion of this paper, Dr. W. L. Rodman said that more radical treatment than is usually thought necessary should be employed in cases of gastric ulcer. When the diagnosis of ulcer is made the excision of the ulcer-bearing area to prevent perforation seems advisable. This presents neither great difficulty nor risk of danger as in probably 80 per cent. of cases the area is located where excision is readily accomplished. Dr. Gibbon, in closing, made very emphatic a point which he had mentioned in connection with one of his cases, namely, the extensive induration of the stomach wall. This is an important point in view of the reported cases of gastro-enterostomy for gastric cancer which have been followed by the disappearance of the cancer. Such have probably been cases of induration surrounding an ulcer. In his own case he would probably name the condition malignant had it been in the neighborhood of the pylorus. He cited a supposed case of pyloric cancer in a debilitated woman upon whom radical removal was considered to be inadvisable. Gastro-enterostomy was performed with the idea of later resection if the condition of the patient improved enough to warrant its undertaking. The progress has been so satisfactory that it encourages the hope that it was also an indurated ulcer rather than a cancer.

CHICAGO.

Resignation of Dr. Jaques.—Dr. Wm. K. Jaques has resigned as bacteriologist of the Health Department. His resignation has been accepted, and Dr. F. E. Wynekoop has been appointed temporarily to take charge of the Laboratory.

Sanitary Inspection of Illinois Cities.—The inspector for the State Board of Health, Dr. E. F. Baker, has made an inspection of Taylorville, Pana, Shelbyville, Carlinville, Carrollton, Petersburg, Havana, and Mattoon. An excellent sanitary condition is said to prevail in all of these cities. Several cases of scarlet fever were found in and near Taylorville, and two cases of diphtheria in Pana, with one death.

New Hospital Opened.—The Victoria Memorial Hospital and Training School was opened October 2, with an address by Dr. E. P. Murdock.

Suicides.—According to the weekly bulletin of health, of the 54 deaths by suicide in September, 16 were caused by carbolic acid, 9 by gunshot wounds, 7 by gas asphyxiation, 6 by opium, 4 by cutting throat, 3 each by hanging and undetermined poisons, 2 by Paris green, and one each by chloroform, formaldehyde, hydrocyanic acid and burning.

To Check Ravages of Tuberculosis.—To combat and prevent consumption is the purpose of a movement undertaken jointly by the Chicago Bureau of Charities, the Visiting Nurses' Association and a number of prominent physicians. The city will be divided into eleven districts, practically corresponding to the divisions of the charity bureau, where physicians and nurses will be in charge to investigate all cases in the neighborhood. The plan for the prevention of the disease includes both medical and material aid, of which the latter will be furnished from a fund of private contributions. The project is based chiefly on the preventability of the disease, and it is therefore the purpose of the allied interests to employ every possible precaution against infection. This, it is hoped, will be effected by the proper collection and destruction of the sputum and by an increase of the bodily resistance of the consumptive through hygienic modes of living. "Every consumptive who is not taught how to dispose of his sputum, by the dissemination of the germs therein contained, endangers the health of all those around him." This is the slogan of those who have entered on the crusade, and the public is to be instructed, through reading matter on the subject, how to care for those who come in contact with the consumptive. Public lectures will be given further to enlighten the people, and the "district physician" will furnish additional information. The needy will be supplied with food, medicines, spit-cups and articles which will promote cleanliness in the homes. Persons working under unhygienic conditions will be furnished healthful occupations, and, when the case necessitates, the consumptives will be transferred to more favorable climates. Eventually health farms for convalescing children, sanatoria for curable cases, and hospitals for advanced cases will be founded.

Funds for the undertaking have already been appropriated by the Bureau of Charities and the Nurses' Association, and private subscriptions will be solicited. A munificent endowment has been promised, but the authorities decline to give out the donor's name before the first meeting of the directors, which will be held the latter part of the month.

CANADA.

The Opening of the Toronto New Medical Buildings and Laboratories.—The formal ceremonies in connection with the opening of the fine new medical buildings and laboratories of Toronto University took place on October 1 and 2. On the afternoon of October 1, in the North lecture-room, before a brilliant assembly of noted medical men from the United States and Canada, as well as many eminent and prominent laymen, the opening and dedicating ceremonies were held. To begin with Dr. Hoskin as chairman of the Board of Trustees of Toronto University, formally handed over to Dr. Loudon, the President of the University, the keys of the new medical laboratories. Afterward Dr. Loudon called upon Professor Charles Scott Sherrington, of the University of Liverpool, to deliver the opening address, which he did in a very able and masterly manner. Following this, President Loudon introduced the representatives of sister institutions in the United States and Canada, all of whom made short congratulatory addresses, wishing the new medical laboratories and the University great and continued success. These representatives were: Professors Welch and Osler, of Johns Hopkins; Prof. Keen, of Jefferson; Prof. Abbott, of the University of Pennsylvania; Professors Roddick, M.P., and Adami, of McGill; Prof. and Senator Sullivan of Queen's; Prof. Barker, of Chicago; Prof. Chittenden, of Yale; Prof. Townsend Porter, of Harvard; Prof. McMurrich, of the University of Michigan, and Prof. Roswell Park, of the University of Buffalo. The occasion also marked the first public appearance of the newly amalgamated medical faculties of Toronto and Trinity Universities, and every satisfaction was felt and expressed at this great consummation. On the evening of the first day Prof. Osler delivered the annual opening lecture to the students. While he did not believe

much in this lecture, he was at the present time very proud to be the recipient of the honor. Needless to state, this brilliant son of Canada received a warm and enthusiastic welcome from his audience. A special convocation was held on the afternoon of the second day, the morning having been devoted to special lectures to the students in the various lecture rooms by the visiting representatives, particularly by Professors Barker and Abbott, at which the following received the degree of LL.D. *honoris causa:* William Williams Keen, Philadelphia; William Henry Welch, Johns Hopkins University; William Osler, Johns Hopkins University; Russell Henry Chittenden, Yale University; Charles S. Sherrington, of the University of Liverpool, and Henry Pickering Bowditch, Harvard, *in absentia.* On the same evening the Dean, Dr. Reeve, and the members of the Medical Faculty tendered the visiting delegates a banquet in the University dining-hall. Thus was the new medical building of Toronto University, which, Professor Osler states, is the finest on this continent, fitly opened and rendered more appropriate by the celebration of the marriage ceremony of the two one-time famous rival institutions, Trinity and Toronto.

Consumption Sanitarium May Be Erected in Montreal.—The Executive Committee for the League for the Prevention of Tuberculosis in Montreal, met last week, and many important matters were taken up and discussed. Dr. T. G. Roddick, M.P., was in the chair, and he was supported by Sir William Hingston, the Hon. Dr. Guerin, Dr. A. J. Richer, Prof. Adami and Drs. Hutchison, Hamilton, Hackett and Laberge. One of the chief questions discussed was that of securing from the provincial government a grant of 100 acres of land for the purposes of a sanitarium. Dr. Laviolette expressed his willingness to give a grant of land to the League, provided they complied with certain conditions which he named. His offer will be considered and doubtless accepted. The League since May last has dealt with 70 cases. About 200 visits had been made by an inspector and 72 houses disinfected. Financial assistance had been rendered several cases by the League.

Typhoid Fever in Montreal.—Typhoid fever seems to be spreading in Montreal. There are now 35 cases registered in the General Hospital, and among the number are two nurses of the hospital. There are 25 cases in the Royal Victoria Hospital, 12 in the Notre Dame Hospital and 4 at the Western Hospital.

McGill University.—The formal opening of the medical department of the University of McGill for the session of 1903-4 took place on the afternoon of September 22. Lectures began the following day, to continue to May 21, when the annual examinations are to be held. The number registered up to the present is 333, but it is expected that there will be over 400 present. The freshman class numbers 115.

District of St. Francis Medical Association.—The District of St. Francis Medical Association met at Sherbrooke, Que., on September 9, with Dr. W. D. Smith presiding. A vote was carried calling for the reduction of the representatives of the College of Physicians and Surgeons of Quebec from 43 to 25. The following officers were elected: President, L. C. Bachand, Sherbrooke; first vice-president, J. McCabe, Windsor Mills; second vice-president, A. G. Beique, Magog; secretary, F. A. Gadbois, Sherbrooke; assistant secretary, E. J. Williams, Sherbrooke; council, W. A. Farrell, F. J. Austin and Dr. Camirand.

Montreal General Hospital.—According to the last quarterly report of the Montreal General Hospital, there were 813 patients treated in the wards during that quarter, with 67 deaths, 26 of which occurred within three days after admission, thus making the ordinary mortality 5 per cent. The total number of hospital days was 16,177, with an average detention per patient of 19.9 days. In the outdoor departments there were 8,651 consultations, an increase of 541 over the corresponding quarter of the previous year. The ordinary income for the quarter was $16,054.44, as against $18,501.08 for the corresponding quarter of 1902. The expenditure for the quarter was $24,916,78, as against $23,837.63 for the same quarter in 1902.

Association of Health Officers of Ontario.—The Eighteenth Annual Meeting of the Association of Ontario Health Officers was held at Peterboro, Ont., on September 9, under the presidency of Mr. Thomas MacFarlane, Chief Analyst for the Dominion Government, Ottawa.

Canadian Medical Association.—The Thirty-seventh Annual Meeting of the Canadian Medical Association will be held in Vancouver, B. C., in August or September, 1904, under the presidency of Dr. Simon J. Tunstall of that city. Dr. George Elliott, Toronto, is the general secretary.

GENERAL.

English-American Medical Society's Dinner in Paris.—The Fifteenth Annual Dinner of the Anglo-American Medical Society was held on last Tuesday evening at the Hôtel du Palais d'Orsay under the presidency of Mr. Maurice de Bunsen, Minister Plenipotentiary at the British Embassy. Mr. Bunsen made a speech, uniting in one toast King Edward, President Loubet and President Roosevelt. Drs. Linn, Mills, Bull and Bottentuit were among the speakers. Others present included Drs. Herbert, Landort, Lowenburg, Lobinson and Spaulding.

A New Intoxicant.—During the South African campaign the British soldiers discovered a new and extraordinary form of intoxication. The ingenious privates found that they could get all the excitement of a powerful narcotic by eating a cordite charge of cartridges, each of which contains sixty strands of cordite and is very similar in appearance to vermicelli. The *British Medical Journal* gives particulars of this form of intoxication. It says that Major Jennings, on learning that the men had been eating cordite, made experiments himself. On sucking a strand he found it sweet, pleasant and pungent, but it resulted in a headache which lasted for thirty-six hours. Dissolved in tea it produces almost immediate exhilaration, "inciting almost demoniacal actions," followed by a heavy sleep and stupor of from five to twelve hours, according to quantity taken. Added to beer it produces the worst effects, exciting a quarrelsome and destructive mania and producing the most rapid intoxication.

The Struggle Against Consumption in Scranton.—So many inquiries concerning the new Scranton Consumptive Hospital have been made that the Board of Managers have issued a pamphlet. The sanatorium was opened August 3, and is the first institution of the kind to be established by a city for its own cases. It is on a thirty-acre farm on the West Mountain, having an elevation of about 1,400 feet. The land is being worked and when fully developed the farm will furnish all the milk, eggs and garden produce needed. Since its opening the sanatorium has received 23 patients. Of these, two found homesickness a worse malady than consumption and left. Two others were unfortunately so far advanced that cure was not possible and had to be returned to their homes, where they both died a short time afterwards. This leaves 19 still under care.

Of these 19, a considerable number have improved so much that their recovery is certain. Medicines play but little part in the treatment. All live in tents and twenty-four hours a day in the fresh mountain air with good food is all that is necessary. The results have been very satisfactory.

SOCIETY PROCEEDINGS.

THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Semi-annual Meeting, held in the Academy of Medicine, New York City, October 13 and 14, 1903.

FIRST DAY—TUESDAY, OCTOBER 13, 1903.

Hepatic Drainage.—The first paper on the program was read by Dr. J. B. Deaver, of Philadelphia. Where there is pus in the biliary region it seems always important to drain. Purulent collections on the external parts of the body, where they can be watched, and where at the slightest sign interference can be secured, are nearly always drained if infection has taken place. How much more important is then precaution to deepen the abdominal cavity whenever there is pus in the biliary tract. The process undoubtedly saves many lives. Whenever there is ascending suppurative cholangitis drainage seems necessary. Acute cholecystitis—that is, infection of the gall-bladder, will often subside under medical treatment and does not need surgical intervention. If the affection ascends into the hepatic ducts, however, interference is needed, and drainage is advisable. The sign of an ascending infection is a persistence of jaundice. It is the custom to attribute too many cases of obstruction of the biliary ducts to the presence of stones. There are other important causes. Infection of the mucous membrane of the biliary duct often causes stoppage that may last for a considerable period. Dr. Deaver has found in not a few cases an enlargement of the gland situated at the junction of the biliary ducts. This gland may enlarge not only from malignant degeneration, but also because of an infective process. In cases where obstruction occurs it must not be forgotten that the pancreas may become infected and that pathological processes in the pancreas are prone to be lasting. Early surgical intervention, therefore, is of the greatest importance. Dr. Deaver gave the details of several cases in which infections were followed by serious hepatic symptoms which subsided after drainage. In one case the *Staphylococcus pyogenes aureus* was found in pure culture. After typhoid fever suppuration of the gall-bladder occurs not infrequently. The infection may take place during convalescence or even after all symptoms of the disease have been absent for a considerable period. The typhoid bacillus seems to have a particular liking for the biliary passages, and carefully collected observations made at the German Hospital during the past year show that in nearly all cases of typhoid fever, there is a distinct tenderness in the gall-bladder region. In three cases of gall-stones that have been under Dr. Deaver's care very recently, not only was there a history of typhoid fever, but typhoid bacilli were found in the bile. It is unfortunate, as a rule, to trust these cases to the process of nature, since not infrequently further extension of the infection will take place. In certain cases infectious processes may give the symptoms of gall-stones without any calculus having been formed.

Extension of Infectious Processes.—An English army surgeon has recently pointed out that multiple abscesses of the liver occur much more frequently as a result of neglect of infections of the biliary passages than has usually been thought. In one case one of these abscesses opened into the lungs and the patient coughed bile-stained sputum. An empyema operation was performed, and for a time the patient was improved, but there afterward occurred a further extension of the purulent process. A perinephric abscess was opened and proved to contain bile-stained pus. At the autopsy several large abscesses were found in the liver, besides an abscess in the lungs and one around the kidneys. Where extensions occur from purulent processes in the liver, patients usually succumb in about three weeks. It is evident in these cases that the only salvation for them is drainage after surgical treatment, and medical treatment can be of no avail.

Choice of Operations.—Dr. Deaver said that he had sometimes regretted having removed the gall-bladder entirely, but he has never had occasion to regret the opening of the gall-bladder and the employment of drainage. In all acute cases he prefers the latter procedure. Cholecystectomy is the more ideal operation, but cholecystostomy the more practical one. In acute cases particularly is this true, and there need be no fear of fistula, provided the biliary ducts are patulous. If, in one of these operations, infection of the liver has occurred, or is even suspected, then drainage must necessarily be employed. The appearance of the liver after a time indicates to the practised surgeon the occurrence of infection.

Some Opinions in Gall-surgery.—Dr. Deaver does not agree with Kehr as to the advisability of dispensing with drainage in calculus cases. Not infrequently the presence of a calculus itself is an index of previous infection that has not run out. Besides the irritation set up by a calculus usually makes a favorable nidus for microbic growth. Dr. Deaver does not consider that cholemia is nearly as important a factor in the death-rate as is sometimes thought. It is not bile in the blood, but the absorption of infectious material from the biliary passages that gives rise to the symptoms usually called cholemic. If medical men, who send their patients suffering from biliary symptoms to Carlsbad, would instead send them to a surgeon here in America, the results would be better and would be ever so much more lasting. Dr. Deaver is of the opinion that when in doubt the surgeon should drain just as when in doubt the players should play trumps.

In opening the discussion, Dr. Vander Veer, of Albany, said that he agreed with Dr. Deaver in the necessity for more frequent operations in biliary conditions and also in the advisability of drainage. The surgeons of this country have cleared up the pelvis and the conditions in the right iliac region, and now it is to be hoped that the same favorable result will follow in the biliary region. The diagnosis between true gall-stones and infections simulating gall-stones is not always easy. Dr. Vander Veer considered that posterior drainage is sometimes indicated in these cases, and has found it of the greatest service. The opening is made through the posterior peritoneal pouch. Now that drainage is used more generally, the results of biliary surgery will be better, and physicians will be ready to have their patients referred to the surgeon. If every physician would realize that when a jaundice has persisted for more than two weeks, the case must ultimately come into the surgeon's hands, there would be less delay in consulting with the surgeon in such cases.

Simple Drainage.—Dr. George R. Fowler, of Brooklyn, said that drainage is always an important element in biliary surgery. It is dangerous, however, to attempt to make this drainage complete by beginning from the hepatic duct, though this may seem the better in theory. A live patient with a fistula is always a better result than a dead one with a perfect system of

drainage. Dr. Fowler does not consider that posterior drainage is advisable. While it is mechanically ideal, it is often fraught with difficulties, especially where the posterior adhesions are thick. This is apt to be the case in patients with long-standing conditions, and it is especially in these patients that the operation would be indicated, if at all. Dr. Fowler considers that Kehr's dictum to let acute cholecystitis alone and give it over entirely to the medical man will not be found the best in many cases. The medical man must learn the lesson that has been taught by the experience in appendicitis, to share responsibility with the surgeon early, and gradually to educate the laity into the necessity for early operations in biliary cases.

Serious Infections.—Dr. Maas, of Buffalo, said that sometimes a generalized septic infection takes place from a suppurative process in the biliary tract. Obstruction of the gall-ducts by an infection leads to absorption, and in one case recently he found streptococci not only in the blood, but also in the cerebrospinal fluid. Obstruction of the ducts takes place not only from stone, but also from inflammatory swelling of the mucous membrane, though not infrequently this will subside after death, and at autopsy the ducts will be apparently patulous.

Drainage Not Excision.—Dr. Ford, of Utica, N. Y., said that in his experience in gall-stone surgery he always employed drainage, but hesitated about excision of the gall-bladder. The fact that a gall-stone was not found on operation was not always proof that the origin of a biliary inflammatory process was not due to a gall-stone. In a patient operated on not long ago, no gall-stone was found, yet, two years later, symptoms of obstruction of the intestines having occurred, at operation a large enterolith was found in the transverse colon. This had either ulcerated its way out of the gall-bladder before the operation or had formed a separate pouch, and, later on, without symptoms, ulcerated a passage into the intestines. Personally, Dr. Ford would prefer to have his own gall-bladder drained after opening, rather than excised.

Dr. Jacobi said that there is too much distinction made between the medical man and the surgeon with regard to these conditions. The surgeon should be not merely an operator, but a physician, capable of treating a patient and of diagnosing the exact condition present, as well as able to do the manual labor necessary for surgical interference. In these cases of gall-stones in which nephritis is present, it seems to Dr. Jacobi that the nephritis has been exaggerated by the irritative material found in the blood during cholemia. Usually the nephritis is the result of an infection early in life, for the infectious diseases of childhood leave a chronic nephritis much more frequently than has been thought.

Dr. Deaver, in closing the discussion, said that he was glad to find so many of his surgical friends agree with him, since he was sometimes accused of being a man who liked to differ from others and head a rebellion. With regard to posterior drainage Dr. Deaver has his doubts. The gynecologists after operating upon the pelvis, sometimes drain through the vagina. Whenever Dr. Deaver has had occasion to do this himself he has found that the postoperative morbidity was apt to be increased, and if the operation was performed in a hospital the resident physicians are apt to insist that the patient will suffer much more than if the additional opening for drainage were not made. It is important to avoid much manipulation in biliary surgery. The patients will perish if the surgeon attempts to do much. Even when the gall-bladder is quite friable, drainage is often better than any attempt at excision.

Medical treatment in these cases practically always leads to the infection of other organs.

Treatment of the Underfed.—Dr. W. S. Ely, of Rochester, called attention to the number of patients, usually women between eighteen and thirty-five years of age, who come for treatment with manifold symptoms, and with the characteristic appearance of underfeeding and underweight that is evidently the basis of their ailments. Such patients are apt to be reasonably comfortable in repose, but miserable in activity. They are not hysterical, they have not been worn out by childbearing or child-caring, and do not suffer from nerve tire or womb ills. Tonics in ever-changing combinations of strychnine, quinine and iron are for them like Tennyson's brook and "go on forever." Pepsin and pancreatin tablets are always by them, yet without result. They are a drag on their relatives and friends, and a nuisance to their physicians. They change their physicians frequently, and having exhausted the regular school, take to quack nostrums and the irregulars. Always without result. They become resigned at last to a life of chronic invalidism. An examination of their diet list, however, will show that the amount of food taken is hopelessly inadequate to support them. Bread and coffee in the morning, bread and tea, with a little meat, at noon, with perhaps a vegetable or two; bread and tea, with some sauce, at night. If told that what they eat is not equal in nutritive value to the two quarts of milk that the infant is supposed to take in the twenty-four hours, they will at once respond that they are unable to digest more. They have never eaten more.

Treatment.—The only hope for such patients is absolute rest and a diet of milk, chocolate and raw eggs. This is more satisfactorily accomplished in a hospital. Rest is necessary so as to divert all their nerve force to their digestion. At the beginning they should have a quart of milk, a quart of chocolate made in milk and six raw eggs. Every physician has patients who cannot take milk, and yet very few patients will be found to be absolutely hopeless to milk if proper care is taken. Many patients are ruled by their stomachs, and sometimes these same stomachs rule their physicians. The mind has not a little to do with stomachic conditions, and some patients become so seasick that even before sailing they throw up in their staterooms. Discipline and training are important for these patients, and will be of the greatest service. It is expected that there will be much objection to this method. Different modifications of milk will have to be employed. Of course, there will be complaint of fulness and discomfort, which can be varied by various methods. Milk may require to be taken so slowly in what some patients call masticating it. Chocolate should be taken almost as slowly. A glass of milk or a cup of chocolate should be given every two hours during the day, and every three hours at night. A moderately coated tongue may be looked for. Rhubarb and soda tablets, from six to twenty per day, should be given, as may seem necessary, in order to keep the bowels open and the stomach sweet. They seem to serve as an aid in the digestion of milk. The patient should be weighed weekly, or semi-weekly. No gain need be expected during the first week, but there should be a gain of from one to three pounds per week for twelve weeks after that. There should be a gradual increase of the amount of milk taken by small increments until from four to six quarts per day are consumed. Patients stand this quantity of nourishment very well, but a curious element in these cases is that the excess of nutriment disagrees and is rejected after the patient gets up to the normal weight. One of the most important factors of the treatment is the education for the future. Needless to say, all patients should have

confidence in their physicians, otherwise the treatment need not be begun, as it would be a failure. The fact of the matter is that man's reason seems not so good a guide as to variety and amount of food required as is the instinct of the animal.

Low Blood Pressure.—Dr. E. B. Angell, of Rochester, said that it is useless to put coal on the fire, unless the ashes are removed from beneath. It is useless to overfeed patients unless sufficient oxygen is supplied them to burn up the nutritive material taken in. Dr. Angell has found a distinct decrease in blood pressure in underfed patients, which markedly differentiates them from the neurasthenics, who have increased blood pressure. This seems to be due to the fact that the indoor life led by these patients does not supply them with sufficient oxygen for proper metabolism. The most important correction then is to see that they get sufficient air.

Dr. Fisher, of New York, said that many of these underfed cases are seen by the neurologists, as neurology has become the dumping ground for whatever is indefinite in medicine. The rest cure is undoubtedly of benefit in these cases, but anyone who expects to help every case will be sadly disappointed. It is impossible to foretell what cases will be benefited, though many of them do well. It is not unusual at this season of the year to have patients who have failed to be benefited by the rest cure during the preceding winter, come back from their summer vacation, having gained twenty to twenty-five pounds in weight and feeling much better. The gain in weight, however, does not always necessarily bring with it lack of symptoms. After a very short time these people revert to their previous condition of inability to lead an active life.

Dr. Ely, in closing the discussion, said that no one realizes the necessity for fresh air more than he does himself. He has the habit of always asking patients just how many hours per week they spend in the air, and then points out to them what relation their six to ten hours of open air bears to the hundred and sixty-eight hours of the full week.

Mental Exercises and Disease.—Dr. M. A. Veeder, of Lyons, read a paper on certain faculties of the mind that are not understood and not sufficiently used with special reference to the exercise of these faculties for the relief of epilepsy. He called attention to the fact particularly of a number of rudimentary faculties as certain special senses with regard to direction, lapse of time, as in the possibility that some people have of waking at a certain hour, and special sense of number. There are in the mind certain faculties that can be brought by special exercises and that help to the control of such nervous explosions as epileptic seizures are. He pointed out the value of such exercises as important in suggestive therapeutics, and gave the details of some cases of epilepsy that had been benefited by this method.

Dr. Edward Fisher, of New York, said that epilepsy as an organic disease of the brain, affecting very probably the brain cells, could not be modified to any noteworthy degree by mental training. There had been no little disappointment as to results in this direction obtained at Craig Colony and Bielefeld, in Germany.

Dr. Angell, of Rochester, said that Dr. Veeder's suggestions are as yet too theoretical to be of much practical use. It is nothing new in psychology that he was introducing, but rather something new in terminology.

Dr. Veeder said, in closing the discussion, that he did not expect to cure epileptics, but to relieve their symptoms by producing compensatory effects upon their nervous systems.

Vaccination and the Law.—Dr. Nelson G. Richmond, of Fredonia, detailed some of the difficulties of enforcing vaccination under the present law. He suggested that in England, as the result of the conscience clause exception to the vaccination act, some of the opposition to vaccination had disappeared. This conscience clause had been inserted with the approval of such thorough believers in vaccination as Paget and Lister. He suggested the advisability of modifying the law so as to make it less radical than at present.

Dr. Jacobi, of New York, in discussing the question, said that the State is responsible that a man's neighbors shall not expose him to the danger of smallpox by refusing to be vaccinated. It is the lives of citizens that may be saved rather than the sparing of the whims of cranks that is the function of government. Any change in the present law in the line of making exceptions is sure to do harm rather than good.

Cure of Opposition.—Dr. J. O. Roe, of Rochester, reported a case of radical cure of opposition to the vaccination law. The subject was a physician who was bitterly opposed to vaccination, contracted smallpox, was sent to the pesthouse, and there had the opportunity to study personally the statistics of the unvaccinated who come down with smallpox. He came out an ardent advocate of vaccination.

Otitic Serous Meningitis.—Dr. Francis Huber, of New York, reported a case of serous meningitis following otitis in which, notwithstanding an unfavorable prognosis, recovery followed promptly upon lumbar puncture and the removal of the pressure upon the nervous centers by the collection of serous fluid.

AFTERNOON SESSION.

Therapeutic Uses of the Roentgen Rays.—The afternoon session was taken up by a symposium on the Roentgen rays in medicine. Dr. A. D. Bevan, of Chicago, opened the discussion with a paper on this subject.

Roentgen Rays and Malignant Disease.—Dr. Bevan said that in superficial cancer, especially superficial epitheliomata, the X-rays have proven to be of the greatest service. Experiments with the X-rays for deeply-situated cancers, however, have so far been without success. The utility of the X-rays for recurrent carcinoma is still in doubt, though nodular recurrences usually disappear promptly under exposures to the X-rays. The question whether, after operation, all patients who had been suffering from malignant disease should be treated by the X-rays is as yet open to discussion, and will require a number of observations before it can be decided. The effectiveness of the X-rays in malignant disease tempts the practitioner to their use, yet the lack of success in so many cases is discouraging. Dr. Bevan has experimented with the idea of finding out whether the liberation of certain resolvent substances in the tissues might not be of service in producing more lasting favorable results. The two substances that naturally come under this head are iodine and arsenic. The mere physical experiment of mixing a solution of potassium iodide with starch, and exposing it to the X-rays shows that much more iodine is liberated under the influence of X-rays than in a test solution which has not been exposed to the rays. In one case of inoperable mouth carcinoma, Dr. Bevan tied both carotids and used the X-rays at the same time that considerable doses of potassium iodide were administered. The result was the disappearance of the cancer with no recurrence up to the present time. A case of actinomycosis of the neck, treated with combined potassium iodide and the X-rays also did very well.

Applicability of X-rays.—They should be used in superficial epithelioma, especially of the face; secondly, after operation in order to prevent recurrences, and thirdly, in inoperable cases as justifiable experiments.

There are two dangers in their use. The first is the possibility of X-ray burn, a risk which can be reduced to a minimum by practice in the use of the X-rays; the second danger is the employment of the X-rays where they are not indicated, with resultant delay in the application of other measures of treatment. Many such cases are now coming under observation, so that it seems not too much to say, that, taken all in all, the use of the X-rays has done more harm than good.

The Roentgen Rays in Diagnosis.—Dr. C. L. Leonard, of Philadelphia, said that the use of the X-rays in diagnosis depends more on the expertness of the operator than on almost any other factor. Personally he has had a very wide experience with regard to the diagnosis of calculous nephritis, having examined more than three hundred cases in which he has found this method of diagnosis of very great service. In the two cases in which, after a positive diagnosis, there was a failure to find a calculus, the patients weighed over 200 pounds, and the diagnosis had been calculus or an incrustation of a portion of the pelvis of the kidney. In one of these cases, a mass of pus and crystalline débris was found. The ease with which calculi may be overlooked is illustrated by a case in which, at one operation, no calculus could be found, though carefully looked for, yet, two weeks later, at a subsequent operation, the calculus was discovered. In 45 cases in which a negative diagnosis as to calculus was made—that is, in which no shadow could be found on the plate, subsequent developments proved the diagnosis to have been correct. The total combined error of negative and positive diagnosis was less than two per cent., and the value of this method of diagnosis was greater than any other. One of the sources of difficulty was well illustrated by a case in which calculi were declared to be present, but examination showed the existence of eight phleboliths in the veins of the broad ligament. These veins had become varicosed and thus given rise to the lithic formation. The patient had suffered from vague discomforts not unlike nephritic calculus in certain ways, and the operation was indicated. After removal of the phleboliths, no further discomfort was felt. Five years ago, Dr. Leonard claimed that the X-rays could be used successfully for the diagnosis of calculi. Further experience has confirmed this first idea. Where there are clinical symptoms apparently of renal calculi, negative diagnosis justifies expectant treatment. On the other hand, where there are no symptoms of calculi, yet vague disturbances pointing to some abdominal pathological condition, calculi can be detected and purulent collections in the renal pelvis prevented. This method of diagnosis guards against certain dangers in operations also, as, for instance, in cases of multiple calculi, when one or more stones are found the operator may not search sufficiently, and leave others in place. In the same way there may be stones in both kidneys. This is much more common than used to be thought. When pus is present in the kidney this can often be recognized by the shadow. At times the mottling of a shadow reveals the presence of tuberculosis, or of cystic degeneration of the kidney.

Sarcoma and the Roentgen Rays.—Just a year ago, Dr. Coley said that he called attention to the folly of talking of cures of malignant disease in cases that had been under observation only weeks or months. Now, as the result of over a hundred cases of sarcomata, treated by means of the X-rays, he is sure of his previous position in the matter. In a number of cases treated by him, improvement occurred almost at once under the X-rays, but not infrequently, after four or five months there was a recurrence of the original growth or metastases were noted. Dr. Coley again showed a patient exhibited last year in whom there was a sarcoma of the femur that had retrogressed very favorably under exposure to the X-rays, though there were still some signs of the morbid process in the leg. A sarcomatous process had begun in the clavicle and ribs, however, that threatened to be fatal. In another case of sarcoma that had been improved by exposure to the X-rays, metastasis took place to the lumbar region. Under the influence of the toxin treatment, however, this softened and the patient is in reasonably good condition. In malignant disease of the cervix, exposure to the X-rays brought about an apparent cure, but after a year there was local recurrence. In a severe case of Hodgkin's disease, which came under observation in September, 1902, Dr. Coley last year reported a decided immediate improvement. This improvement continued to such an extent that the man was able to go back to his business and the spleen particularly became reduced to its normal size. In April, 1903, however, the liver became very much enlarged and intense jaundice developed. At the end of about a month after this the patient died. This corresponds with Dr. Francis Williams' experience in Boston. In his case the improvement was followed by death in about six months. Nodules of recurrent carcinoma, especially of the breast, disappear kindly and promptly under exposures to the X-rays, but recurrences are the rule. In one case the sternum and ribs became involved and a fatal termination took place.

Dangers of X-ray Treatment.—There are, in Dr. Coley's opinion, two serious dangers in the use of the X-rays. The first of these is the possibility of causing dissemination of the malignant process or even causing it at times to take on irritatively a more rapid growth than would otherwise be the case. When a malignant process has been exposed to the X-rays and has decreased in size and then takes on a new growth the surgeon may not realize how widely he must cut in order to remove all the malignant tissues. A case illustrating this has recently been under Dr. Coley's care. The patient suffering from epithelioma of the lip was treated by the X-rays and the tumor disappeared. After some months it recurred, however, and then the X-rays had no effect upon it. It now began to grow rapidly, and was almost inoperable when the man came for operation. The X-rays seem to be especially indicated, in Dr. Coley's opinion, for epitheliomata of the face, especially situated near the eye and the nostril where operations are sure to prove so disfiguring.

X-rays and Finsen Light.—Dr. Hopkins, of Brooklyn, said that he has never tried the mixed treatment of the X-rays and potassium iodide, as suggested by Dr. Bevan, but has found the combination of the X-rays and Finsen light very useful. How important a therapeutic agent the X-rays are can be judged from the fact that in a woman pregnant in the seventh month, from whom the breast had been removed for cancer, six nodules of cancerous material appeared in the scar, owing to the physiological condition of the breast evidently. These disappeared promptly under the use of the X-rays. Dr. Hopkins considers that the name X-ray burns is a bad title, since the lesion produced is entirely unlike a burn. It is by no means necessary that the skin should be affected, yet a serious condition of the underlying tissues may be produced. In the practice of others Dr. Hopkins has seen white gangrene occur beneath an unbroken skin. The burns of radium deserve much more that name. There is in the X-rays a very powerful agent, but its limitations are not as yet understood.

In cervical cancer Dr. Hopkins has found the X-rays and the Finsen light of service. In one woman brought

to him, the slightest movement caused hemorrhage. It is now over a year since she came under treatment and there are no signs of the malignant process left.

Not Replace Knife.—Dr. Ford, of Utica, said that the X-rays must never be considered to replace the knife. Even in skin cancer it is best to excise rather than trust to the X-rays. In recurrent cancers of the breast the nodules clear up for a while, but the disease returns. In cancer of the cervix, failure has been the rule in Utica. The X-rays do not cure cancer, but they delay neoplastic growth.

Dr. N. Vander Veer, of Albany, considers that X-rays do good, but do not cure. One of their most prominent features is that they afford relief from pain. Occasionally after operations upon the breast, before any nodules of recurrent cancer can be seen, painful conditions develop. These are relieved by exposures to the X-rays. In Dr. Vander Veer's hands, the X-rays from a static machine have seemed to give better results than those from a coil. The coil is reserved for work upon the trunk. The danger of the present use of X-rays is that they may serve to delay the employment of more hopeful measures of treatment. There is much more danger in delay than in anything else and recently he has seen several cases in which patients were promised relief and none was afforded.

X-rays and Cataphoresis.—Dr. Lee, of Brooklyn, said that he has been told of a case in which formalin and formaldehyde were employed in addition to the X-rays, the substances being carried into the tissues by a sort of cataphoretic action. Considerable success has been obtained with this method of treatment. Dr. Lee considers that there is more danger of general infection following the too rapid breaking down of the tumor after exposure to the X-rays than is usually considered. In a patient under his care, two years ago, treatment by the X-rays was followed by rise of temperature, nausea, headache and the patient's death was attributed to metastasis to the base of the brain.

Reaction in Opinion.—Dr. Bulkley, of New York, said that while the X-rays undoubtedly do good in certain cases, a certain reaction against the abuse of them is sure to be of benefit at this time. Experience has shown their positive value, which is superlative for superficial epitheliomata and for rodent ulcer. Epitheliomata situated near the angle of the nose or close to the eye are almost sure to be followed by distressing disfigurement. No treatment succeeds so well in avoiding this as the X-rays. The mildest paste that will be efficient does not succeed nearly as well.

Dermatological and Surgical Epitheliomata.—Dr. Bevan, in closing the discussion, said that the class of epitheliomata that come to the surgeon are, as a rule, much severer than those which come to the dermatologist. It is in the mild attacks that the X-ray treatment is most effective. The postoperative use of the X-rays, though their utility has not been demonstrated absolutely, seems worth while. The X-rays are undoubtedly of service in the diagnosis of stone in the kidney and the failures with this method are due to the crude manner in which the X-rays were applied. Certain points in technic, as suggested by Kümmel, are important. An enormous coil should be used, rather than the static machine and slow tube. The plate should be placed under the lumbar region and the neck should be bent so that the lumbar spine is brought closely into contact with it. The kidney region should be covered, all except an area about the size and shape of the kidney, with a lead plate. This allows of no diffusion and gives very clear shadows. The plate should be examined by transmitted light with an opera-glass at a distance of about 12 feet. One plate is never enough to make the diagnosis. The shadows should be found at least on two plates and as many as eight plates may be needed at times for assurance sake.

Some Technical Points.—Dr. Leonard said that in 50 per cent. of the cases, if a lead plate as described by Dr. Bevan were used, the stone would not be found, as they occur not infrequently in the ureter. The most important bit of technic is that the plate should be put to the front of the patient and the tube applied diagonally so that the shadows within the kidney are not superposed on the bones of the pelvis. Dr. Leonard has found sarcoma of the tonsils amenable in several cases to the action of the X-rays. Obstruction of the esophagus, due to a mediastinal growth, also grew rapidly better under the X-rays. Very recently neuralgias of the head and face, long standing and obstinate to all other treatment, have yielded to a few applications of the X-rays.

Dr. Coley, in closing the discussion, said that the knowledge so far obtained with regard to the X-rays does not justify their use in deep-seated cancer, nor their employment before excision has been attempted in cases where the growth is favorably situated for this. To say that all malignant growths should be submitted to the X-rays first for some time is to invite dangerous delay and to make the ultimate prognoses of the cases much worse than they would otherwise be.

Legal Status of the Roentgen Ray.—Hon. William W. Goodrich, Presiding Justice of the Second Department of the Appellate Division of the Supreme Court of the State of New York, delivered an address on the legal aspect of the use of the Roentgen ray. The first decision based on the legal custom that an ordinary photograph, if relevant and properly authenticated, can be taken in evidence, was made for the X-ray photographs by the Supreme Court of Colorado in 1896. The principle announced by the Justice for the admission of such photographs, was that as medicine advances, law must also advance, and if medical science shows beneath the skin as formerly photographs did the surface of the body, then this method must be admitted as of evidential value. The next decision was made in Tennessee, and on these decisions the recent practice is based, it being considered necessary, however, for such photographs to be verified by an expert of determined qualifications. With regard to X-ray burns the same rule of law holds as with regard to other medical practice, the physician is bound to treat his patient with such skill as is usual in the time and place where the treatment takes place. And this rule of law is upheld by various decisions.

At the evening session of the first day the following committee on reunion was reappointed by unanimous vote with full powers to treat with a corresponding committee from the New York State Medical Association for the corporate union of the two organizations: Dr. Henry L. Elsner, of Syracuse; Dr. Abraham Jacobi, of New York City; Dr. H. H. Vander Veer, of Albany; Dr. Frank Van Fleet, of New York City, and Dr. George R. Fowler, of Brooklyn.

(To be Continued.)

GERMAN SURGICAL SOCIETY.

Thirty-second Congress, held in Berlin, June 3, 4, 5 and 6, 1903.

Distribution of Arteries in Bone.—Despite many experiments upon the development of tuberculous and purulent foci in bone it was difficult to explain why certain bones or parts of bones formed sites of preference. By demonstrating a number of X-ray photographs of bones of young infants whose vascular system was injected with mercury, Lexer was able to show that a

close relationship existed between the position of the lesion and the course of the vessels. In the long bones three vascular systems can be distinguished, the nutrient artery, whose branches extend to the spongy end of the diaphysis, a number of small branches piercing the cartilage between epiphysis and diaphysis and ending in the epiphysis and finally the epiphysial vessels which enter from all sides and either penetrate the joint cartilage or extend into the diaphysis. With increased growth, the anastomoses between these systems become more and more abundant. Tuberculous emboli will be lodged most frequently in the epiphysis, cartilage or upper end of diaphysis because here the finest subdivisions exist. In the phalangeal and metacarpal bones an embolus will hardly be able to travel very far toward the epiphysis in the small nutrient artery, hence the diaphysis is frequently the seat of the tuberculous lesion. The vertebræ possess two large vessels which extend from behind forward. They explain the occurrence of wedge-shaped tuberculous foci with their base anteriorly. In the ribs there is a long, slender nutrient artery which is met in front by a perichondral vessel. In the scapula and pelvic bones the lesions also correspond in position with that of the finest branches. The special predisposition of young individuals can only be explained by greater vascularity.

Diagnosis of Bone and Joint Tuberculosis.—The paper of K. Ludloff deals with the possibility of making an early diagnosis of tuberculosis of the knee by means of the X-rays. In the normal knee he found protuberances at the osteochondral junction of the mesial condyle at the age of two to four years and in the same region of the lateral condyles during the fourth and fifth years. By lateral transillumination a transparent epiphyseal spot is noticed in the front part of the condyles from the first to the fifteenth year. In early tuberculosis characteristic changes are present. The protuberances appear smaller or disappear, bony projections extend from the lower surface of the femur to the tibia, the condyles seem swollen, the epiphyseal spot is larger, more transparent, deprived of its cancellous structure and with sharper contours and the patella, head of tibia and fibula increase in size. When reparative processes go on, the epiphyseal spot will again become cancellous in structure. In simple atrophy these changes were never found.

Glandular Disease of Barbadoes.—This peculiar condition generally begins with a varicose swelling of the glands in both groins which may progress until cystic tumors the size of a man's head are found here. In the rare generalized form, the thoracic duct is involved and the glands of the neck and axillæ are also enlarged. The symptoms vary within very wide limits: a few patients develop a most intense cachexia with fatal termination, the majority complain only of nausea and gastrointestinal disturbances, while in others the disease disappears spontaneously as the patients get older. Sometimes the glands break open and the suppuration of the entire lymphatic system is apt to supervene. The cause of the disease is the filaria which penetrates the skin over the inguinal glands and obstructs the lymph-sinuses. H. Gross states that there is also an indigenous form not caused by the filaria, and six cases have come under his observation in four years.

Results of Asepsis in Wound Treatment.—Primary union was obtained by A. G. Neuber in 97.5 per cent. as compared with 88 per cent. in the year 1884. Infection, where present, was generally caused by gangrene of poorly nourished fascia and this interfered but slightly. In resection for severe joint tuberculosis and in injuries with contused and contaminated raw surfaces, the wound was only partially closed and the rest tamponed. All wounds were completely dried before sutured. Larger operations were interrupted every ten to fifteen minutes by short intervals for cleaning instruments, skin and hands. Torsion or compression took the place of ligatures where possible. Great stress was laid upon care of the hands. During septic operations rubber gloves were used. The dressing of wounds was very simple for small wounds, loose gauze held in place by adhesive plaster; for larger ones, gauze and then a layer of specially prepared felt.

Antiseptic Action of Iodoform.—That iodoform per se is not an antiseptic and that it requires the addition of living tissue to exercise a germicidal action, is well known. B. Heile shows that an emulsion of tissue plus iodoform will not kill bacteria unless the air is kept away from the mixture. Liver has the greatest reducing power, brain and fat the least, spleen, kidney, lungs and blood occupy an intermediary position. Granulation tissue behaves like the organs, but tuberculous granulations are especially active. The bactericidal substance split off is not iodine or iodide, but probably the organic compound di-iodo-acetylene. These experimental researches correspond very well with clinical observations for iodoform is of little value in superficial wounds, but most efficient in deep cavities where air cannot penetrate. Where conditions are especially favorable the action may be so strong as to be actually caustic.

Action of Local Irritants and Local Application of Warmth.—A series of interesting experiments carried out by K. Wessely add considerably to our knowledge of the active curative agent when local irritants such as warmth are allowed to act upon diseased parts. The eyes of rabbits proved to be especially favorable objects for study. A hyperemia sets in and the albumin in the aqueous humor rises from one-fortieth per cent. to one-half per cent. when applications at a temperature of 50° to 60° C. were used. The immune bodies were also found increased; thus, when animals protected against typhoid were employed, the powers of agglutination were increased ten to twenty-fold. The conjunctiva seems to have the same property, for if expressed after the use of warm applications, the albumin rose from one-fifth to one-half per cent. in the transudate. Where hyperemia was rendered impossible by the use of adrenalin, these phenomena were not observed. The speaker believes that in treating local diseases (such as an ulcer of the cornea) there is a decided advantage in combining serum treatment with measures able to bring about a congestion of the parts.

Artificial Substitute for Blood.—H. Küttner has tried various isotonic solutions with or without the addition of adrenalin, in acute anemia, but finds that none are superior to the ordinary physiological salt solution. If, however, the animals were kept in an atmosphere of pure oxygen after the injection, it was possible to save them when as much as 3.5 per cent. body weight of blood had been lost. The experiments were especially successful if the oxygen was under pressure. The most rational method would be to introduce the gas directly into the veins, but for man, at least, this is risky. Hence it is suggested to saturate the fluid injected, with oxygen and a special apparatus for this purpose was demonstrated. In addition, the body must be kept warm and oxygen given freely by inhalation. This method also finds employment in hemorrhagic diathesis, and in preparing run down individuals for laparotomy.

Apparatus to Control Pulse during Narcosis.—Since syncope is the most frequent cause of death in chloroform narcosis and since it is impossible for the anesthetist to continually keep his attention directed upon the pulse by touch, G. Gaerter has constructed a simple apparatus to be adjusted at the wrist which permits one to keep a steady control of frequency and ten-

sion of the pulse during the entire operation. Slight changes are detected with it much more readily than with the fingers and excursions are still noticed when only the stethoscope will decide that the heart is still beating. A quick, tardy or irregular pulse can also be diagnosed. The adjustment is very simple and the arm may be in pronation or in supination.

Anesthesia by Interrupting Conductivity of Nerves.—Solutions of cocaine and allied substances can be used by peri- or endoneural injection to interrupt the conductivity of nerves. An excellent local anesthesia is thus brought about, according to Braun. Endoneural injections are generally possible only after the nerve trunks have been dissected out with infiltration anesthesia; this would prolong the operation quite extensively for amputations, but in inguinal hernias, varicose veins, operations on the anterior aspect of the neck, the time lost is generally slight. For perineural injections, concentrated solutions are necessary unless adrenalin is added (1 to 2 drops of the commercial solution to every cubic centimeter of one per cent. cocaine solution) or unless the extremities are tied off. In mixed nerves the motor and often the vasomotor nerves are often paralyzed as well. An accurate knowledge of the nerve distribution is absolutely necessary. For superficial nerves, a one-half per cent. eucaine solution with adrenalin seems to be best. It may take up to thirty minutes before anesthesia appears; it generally lasts two to five hours.

Enderlen saw a fatal result after 6 c.cm. (1½ drams) of a one-per-cent. cocaine solution with 6 drops of adrenalin. Trying it upon himself he obtained absolutely no effect. Perthes could perform many operations upon fingers and toes, extraction of teeth, tendoplasty, etc., successfully without after-effects.

Dangers of Trendelenburg Position.—In two cases of bladder disease, operated upon by Kraske, the Trendelenburg position was directly responsible for the fatal issues, probably owing to the pressure of the abdominal contents upon a degenerated heart. In two cases (both stout males) intestinal obstruction followed, in one of these there were hemorrhages and erosions in the stomach, probably due to pressure of the displaced omentum upon the portal vein. Kraske thinks the Trendelenburg position is absolutely contra-indicated in myocarditis and obesity.

Trendelenburg himself states that he has never seen cardiac paralysis or intestinal obstruction, but gastric hemorrhages may occur. In the obese the position has little value and should not be used. A special table is recommended which permits of rapid change of position.

Von Eiselsberg has seen an apoplectic attack four days after the operation in a stout patient.

König warns against using the Trendelenburg position with intra-abdominal abscesses since the pus may flow into the free peritoneal cavity.

Lauenstein narcotizes in horizontal position and lowers the table as soon as possible. Paralyses of the peroneal nerve he avoids by a specially constructed shoulder support. It is wrong to blame postoperative ileus upon the position since it may also occur where the pelvis is not raised.

Trendelenburg fears only emesis with full stomach since the patients are very liable to aspirate.

Heidenhain and Rotter always keep the head elevated.

Goepel recommends a special table which permits of any position without endangering asepsis.

Transplantation of Vessels.—The following experiments were tried by Höpfner: (1) Removal of a piece of an artery, reimplantation in the reverse direction or into a defect of another artery of the same or a second animal. (2) Implantation of a piece of vein of the same animal into an arterial defect. (3) Implantation of arteries from animals of other species. Only one was successful. After thirty-nine to ninety-one days the implanted portion pulsated with the vessel, the lumen was not stenosed, though the walls were much thickened. In another series of experiments entire limbs were amputated and then the bones, muscles, chief vessels and nerves and skin again united. In the first attempt, the vessels became thrombosed within twenty-four hours and gangrene set in. The second dog died in narcosis eleven days after the operation, while the dressing was changed, but dissection showed that the experiment was crowned with success. The muscles and vessels were firmly united and only the bone showed little tendency to grow together.

Payr feels gratified that his method of vascular suture has given such good results. He does not, however, believe that a kidney can be replaced by the same organ of a second animal by vessel suture. In one instance he had occasion to resect 5 cm. (2 inches) of the femoral vein and suture the ends with a good permanent result.

Influence of Roentgen Rays upon Epithelial Tissue.—Perthes has repeatedly observed the disappearance of ordinary warts under the influence of X-rays. They will first flatten and harden and in twenty to twenty-five days drop off. The microscopical changes in the wart correspond with those seen in the normal skin. In three cases of superficial carcinoma of the face the ulcer was converted into a granulating surface which rapidly cicatrized. In six cases of breast cancer the metastatic glands under the skin became smaller and disappeared with only slight reactionary inflammation on part of the skin. After ten days the epithelial cell appeared swollen and the nuclei stained less distinctly. The actual number of cells diminished and connective tissue cells and leucocytes extend into the cancerous tissue. The breast tumors themselves could not be cured, but they became distinctly smaller under treatment. Normal epithelium is also inhibited in growth since raw surfaces are covered less rapidly when exposed to the rays. Soft tubes emit rays which are more active upon the surface while those of hard tubes have better penetrating powers.

Lassar recommends the rays from tubes of medium softness for the dermatitis of physicians and also for persistent eczema of the hands.

Kümmel has seen a carcinoma develop as a result of prolonged exposure to the X-rays.

Use of Hard Paraffin, especially for Hernias.—The contribution of Eckstein deals with the use of hard paraffin, which he prefers to vaseline, since it solidifies more rapidly, is not absorbed, remains where injected and never irritates. In filling up bony defects, the adherent skin should first be dissected from the bone. Umbilical and direct inguinal hernias as well as hernial tendencies can be easily treated by means of paraffin. In indirect inguinal hernias the conditions are not so favorable, since the intestines strike the paraffin at a tangent, but much relief can be afforded if a truss is worn at the same time. In young infants the melting point should be no higher than 50° C. and the ethyl chloride spray should be used. Pulmonary emboli have never been seen by the speaker.

Gersuny thinks that paraffin injections in hernias should be restricted to those cases where a radical operation cannot be done. He does not believe that much can be accomplished in umbilical hernias of children. The technic is more difficult than with soft paraffin, but the danger of embolism less.

Case of Total Scalping Healed by Thiersch Skin-grafting.—By means of extensive skin-grafting Karg was able to cover completely a large defect upon the head. The new skin is firm and movable upon the underlying structure, but there is no growth of hair and the sense of touch is somewhat diminished.

Echinococcus of the Skull.—There are only four cases of echinococcus of the skull on record up to the present. In three of these the parasite was seated in the frontal sinus, and in one at the base of the skull. A. Stolz has recently observed a case of *Echinococcus* hydatidosus where the dura was separated from the bone over a wide area and the skull itself perforated in several places. The largest bony defect was situated upon the vertex of the skull and was 16 cm. long and 5 cm. broad. The course of the disease was exceedingly chronic. The first symptoms (cerebral compression, atrophy of the optic nerve and abnormal growth of the skull) made their appearance during the eleventh year; fourteen years later epileptic convulsions were noticed and after ten more years distinct tumors developed upon the skull. Suppuration of the cysts twenty-seven years after the onset, made an operation necessary. The patient died three weeks after operation, and at autopsy an advanced internal hydrocephalus and a non-parasitic cyst in the right hemisphere were found.

Hyperalgesic Zones with Bullet Wounds of the Head.—In four cases of bullet wounds of the head, Wilms noticed very tender zones about the occiput and neck which did not correspond to peripheral nerve distribution, but to the areas innervated by cervical segments. Wilms believes that in all these cases the intracranial course of the sympathetic fibers around the cavernous sinus and carotid artery was irritated and that this irritation was reflexly carried to the sensory centers in the cervical region by way of the many anastomoses which connect the sympathetic with the cerebrospinal system. In the cases with favorable termination, the painful areas disappeared completely after eight to ten days. Müller has observed the same pain on removing sutures after a mastoid operation.

Traumatic Defects of the Skull and Their Treatment.—Bunge followed up a number of cases that had been under treatment for loss of substance of the skull in order to ascertain the best treatment. In 13 cases the defect in the bone had not been closed; of these, four were suffering from traumatic epilepsy, six complained of spots in front of the eyes, vertigo, headache and attacks of syncope; only 3 were free from symptoms one and one-half years after treatment. Where the defect was closed primarily, absolutely no untoward symptoms were complained of, though intracranial pressure was found increased before operation. Where the defect was closed secondarily, all disagreeable symptoms vanished. The technic is very simple: the removed splinter is simply reimplanted.

Surgical Treatment of Non-traumatic Jacksonian Epilepsy.—In non-traumatic epilepsy, surgical interference must be restricted to those forms where character and order of convulsions make it probable that certain definite centers of the sensory-motor region are primarily irritated. In the four cases reported by F. Krause cysts, scars or chronic leptomeningitis was found; in all, the operation was a complete success and the mental faculties have improved steadily. Krause first determines the position of the center involved upon the skull and then removes a rather large piece of bone over this center. Even if the dura is normal and pulsating, it should be incised. Where gross lesions are not found in the cortex the center should be carefully isolated with the faradic current and the cortex, then incised or punctured in the hope of detecting a subcortical cyst. If nothing is found, the center is simply excised down to the white matter. The resulting paralysis or anesthesia will be only temporary and one need not fear subsequent scar-formation over the site of operation. Cases without gross lesions in the cortex are the most unfavorable, yet excision is justified since the condition is sometimes ameliorated and never aggravated.

Lymphnodes of the Cheek.—These lie next to the facial artery and the facial vein as supramandibular gland upon the outer surface of the lower jaw or in the substance of the cheek itself in a line connecting the angle of the mouth with the lobule of the ear, either upon or beneath the buccinator muscle (anterior and posterior buccinator glands). H. Küttner finds that they are placed in the course of the lymph-channels which drain the external nose, lips, the region of eyes, cheeks and temples, the mucosa of the cheek, the alveolar process of the upper jaw, the parotids, gums and tonsils. They may be the seat of acute or chronic suppuration or may enlarge with malignant lymphoma or cancer of the neighborhood. They are most frequently swollen with caries of the teeth and have been seen involved after a chancre of the lips, carcinoma of the outer nose, lower lip, face; more rarely of the alveolar process of the upper jaw and the parotid. It is of the greatest importance to examine these glands in all malignant disease of the face.

Apparatus for Fractures of Lower Jaw.—Warnekros demonstrates an interdental splint of caoutchouc which covers only the lateral surfaces of the teeth. Its labial and lingual surfaces are connected by means of gold wire or caps which pass over the cutting surface. By means of these splints exact adaptation of the fragments without dislocation is possible and the patients are able to speak and chew almost immediately after setting.

Facial Paralysis Treated by Nerve Grafting.—The spinal accessory nerve was implanted into the paralyzed facial in one case by Hackenbruch; nine months later the patient could voluntarily move the angle of the mouth. The muscles supplied by the accessory did not suffer since only two-thirds of the nerve were used. In spinal paralysis of children the speaker also had good results; one-third of the tibial nerve was here implanted into the peroneal.

Körte has had successful cases where the hypoglossal was employed, but believes the accessory is more suitable.

Dollinger is careful not to employ those branches which innervate the sternomastoid; a partial paralysis of the trapezius is less noticeable.

Subcutaneous Extirpation of Tuberculous Lymphnodes of the Neck.—The incision which Dollinger recommends where a disfiguring scar is to be avoided begins at the level of the external auditory meatus and runs 6 cm. downward and backward, about 1 cm. from the hair-line. The glands are removed subcutaneously by the aid of an electric head-mirror. Primary union takes place even where the glands are accidentally ruptured. After extirpation the wound is sutured and drained. The operation is difficult and requires a good deal of experience. König thinks the method is unsuitable for softened or adherent gland.

Thyroid Fistulæ.—The usual causes of thyroid fistulæ are trauma, the presence of foreign bodies, strumitis, especially the metastatic form, infection after enucleation, chronic mycoses, echinococcus and neoplasms. In the majority the walls are thick and encrusted with lime. According to Payr the causes which prevent closure are tissue necrosis after infectious processes, lime concretions and rigidity of the walls. In position the fistulæ may be mesial or lateral. Their com-

plicated course often makes sounding difficult. The usual clinical signs are paralysis of the recurrent, disturbances of the sympathetic, tracheal stenosis, cyanosis, difficulty of breathing and swallowing, feeling of heat in the head and radiating pains in the neck. The fistulæ may be injected with bismuth and then X-rayed. The prognosis is generally good unless vessels are eroded, the trachea is perforated or a mediastinitis develops. The treatment (extirpation of the tract with the adjacent part of the gland) may be rendered very difficult.

Case of Idiopathic Dilatation of Esophagus.—Ettlinger's case was first diagnosed as carcinoma; since, however, the patient did well for seven years after gastrostomy, a dilatation was suspected. At autopsy a very large pouch was found, beginning at the junction of the upper with the middle third and extending to the cardia. The walls of the pouch were the seat of very marked chronic inflammation.

Intubation in Cicatricial Stenosis.—O'Dwyer's method is recommended by Ehrhardt in difficult décanulement in syphilitic and other laryngeal stenoses, instead of tracheotomy in some inoperable cancers of the thyroid and larynx and in laryngeal tuberculosis. Bad results were never seen.

Double Perforation of Thorax.—The woman demonstrated by F. Franke fell from a ladder upon a broom-stick and sustained a complete perforation of the thorax from one axilla to the other. An alarming subcutaneous emphysema appeared soon after the accident which required firm tamponade of the wounds. The patient made an uneventful recovery.

Resection of Thorax for Chronic and Tuberculous Empyemas.—Ringel believes in resecting the greater part of the thoracic wall where the cavity does not diminish in size on continued use of the apparatus suggested by Perthes. Disease of the opposite lung is a contraindication. Decortication of the lung increases the dangers of the operation and can generally be dispensed with.

Jordan recommends Schede's operation with Delorme's decortication. Resection of the scapula should be avoided since the function of the arm will suffer.

Rehn has seen cerebral embolism and bronchial fistulæ after Delorme's operation.

Perthes first fills the cavity with fluid. If all the fluid can be removed by aspiration, *i.e.*, if the walls of the cavity come together when suction is applied, an operation is not indicated.

Ringel concludes the discussion by stating that resection of the scapula cannot always be dispensed with. Completing the operation at one sitting is risky and Delorme's operation is only suited for tuberculosis of the pleura.

Heart Surgery.—The following patient presented was pulseless and in deepest collapse when seen by Schwerin. Injections of camphor and venous infusion had no stimulating effect and urine and feces were voided involuntarily. The heart was rapidly exposed when a stream of blood the size of a lead pencil gushed out of the right auricle. Digital compression and three silk sutures checked the hemorrhage. The pericardium was then sutured to the muscles, and it and the pleura tamponed. The patient is able to work at present, though he developed hydropericardium, empyema and pneumonia as a result of the operation.

Noll then showed a cured case of gunshot wound of the left ventricle. While the wound was sutured the heart was steadied by means of an artery clamp applied beneath the coronary artery. The pericardium was drained for twenty-four hours. At first, pulse and respiration were very much increased and soon an encapsulated empyema appeared which healed after twenty-eight days. The patient has been well now for six months. In cases of this kind, resection of one to three ribs is generally sufficient and large pieces of the sternum should not be removed for fear of bilateral pneumothorax.

Wolf believes the most common and serious danger is the development of an empyema.

Barth lays down the following rules: (1) It is not advisable to decide upon a definite preliminary operation to expose the heart especially since the pleura is generally injured anyway. It is best to enlarge the external wound and follow the course. (2) The pericardium should be completely closed wherever possible, since adhesions of the heart to the pericardium are thus avoided. (3) The heart should be sutured even where there is no imminent danger since an aneurism may form and subsequently rupture.

König thinks a special cardiac suture should be invented. The posterior surface of the heart should also be examined for injuries.

Cardiolysis.—The name cardiolysis has been applied by L. Brauer to an operation for the relief of chronic adhesive mediastino-pericarditis. Patients with this disease generally die soon of myocarditis, since the heart is unable to pull in the elastic, bony thorax with every systole for any length of time without degenerating. The operation consists in substituting a soft covering for the normal, bony wall in front of the heart. One patient died of broncho-pneumonia, but in two others the dyspnea, edema and cyanosis disappeared rapidly.

Simon states that there is great difficulty in choosing the proper anesthetic in such cases. Cocaine is not sufficient, chloroform still further embarrasses the heart and ether is liable to set up a pneumonia. In one case the ribs were resected, in two others also part of the sternum. The most difficult part of the operation is the removal of the posterior periosteum, since this is firmly adherent to the pericardium. Cardiac action must be regulated during the operation by means of digitalis and strophanthus.

Rehn thinks the relief will only be temporary, since new bone will form.

Brauer replies that this is improbable, if all the periosteum is removed.

Therapy of Dermoids of Anterior Mediastinum.—Von Eiselsberg states that it is generally advisable to do a complete extirpation. It may also be necessary to pull forward the collapsed lung and fix it to the wound. The outer wound must be closed by air-tight sutures so that the air in the pleural cavity is rapidly absorbed.

Case of Abnormally Movable Abdominal Muscles.—A strong, healthy man was exhibited by G. Muskat, who possessed the power of pushing the intestines upward so that cardiac and hepatic dulness disappeared completely. Parts of the muscles could be put on the stretch while others were relaxed so that the entire abdomen took on an hour-glass shape. The case proves that through skill and practice some people can innervate separately the physiological subdivisions of their muscles.

Lymph-channels of Diaphragm.—Both surfaces of the diaphragm are very abundantly supplied with lymphatics. Each half of the muscle constitutes a closed lymph-system. The vessels stand in free communication with those of the parietal peritoneum and the pleura, so that pathological processes can readily wander from abdomen into thorax. H. Kuttner finds that some lymphatics also perforate in the opposite direction so that a subphrenic abscess after an empyema may well occur; since, however, the peritoneum possesses

greater powers of resistance than the pleura, this course of infection is less common than vice versa. The diaphragm also stands in close lymphatic communication with the liver, especially its right lobe.

Pneumococcus Peritonitis.—The course of peritonitis induced by the pneumococcus is considered so typical by v. Brunn that a bacteriological examination is not necessary for diagnosis. Children are usually affected, and girls more often than boys. The onset is very acute with fever, abdominal pains, vomiting and generally diarrhea. Soon, however, the chronic stage supervenes with good general condition. But gradually nutrition will suffer and the abdomen will slowly increase in size. The fluid tends toward encapsulation in the meso- and hypogastric regions; it consists of odorless, greenish-yellow pus, rich in fibrin. Very often it discharges spontaneously in the region of the umbilicus. The prognosis is very favorable.

Von Beck saw four cases of this form of peritonitis, two after appendicitis and two secondary to gangrenous cholecystitis. He does not think the greenish-yellow pus is characteristic.

Leucocyte Count in Perityphlitis.—In catarrhal appendicitis with sero-fibrinous exudate, or in empyema of the appendix, there is a leucocytosis during the first two or three days which generally remains below 20,000 but, in case of empyema may reach 28,000. After the onset, the number of leucocytes drops parallel with the temperature. During the interval there is no leucocytosis. In circumscribed suppurative peritonitis, the figures at first lie between 20,000 and 30,000, and drop during the next five to six days to 10,000 to 15,000. If the abscess undergoes absorption these figures persist; if, however, the abscess grows, a rise up to 20,000 and more is noticed. In purulent peritonitis with insufficient encapsulation the leucocytosis is also high during the first days but there will soon be a fall to 15,000 to 20,000 despite the persistence of severe clinical symptoms. In acutely progressive peritonitis, as many as 20,000 to 30,000 cells are counted during the first twenty-four hours. Still higher figures are obtained up to the fourth day after which there is a fall to 10,000 or less. Patients with high leucocytosis generally give a favorable prognosis, those with low figures usually die. Counts after operation are valuable for the detection of secondary abscesses or ileus. On the whole, Federman thinks that combined with the clinical symptoms, the bloodcount is most valuable to determine the true pathological lesion.

Early Operation in Epityphlitis.—Payr gives the following résumé of his discourse upon the advisability of early operation. (1) The usual statistics on this subject are of little value since the cases vary within wide limits. (2) The existence of a large number of cases which demand immediate operation, is conceded more and more. This refers especially to those cases where the appendix is drawn away from the cecum toward the middle line where adhesions are formed less readily. The topographic diagnosis is thus of as much value as the diagnosis of the pathological condition of the appendix. (3) Immediate operation in all cases with severe onset forms the safest measure to avoid mistakes.

Körte objects to leucocyte counts, since there are many exceptions to the rule, especially in the acute cases and since the ordinary practitioner will hardly be in the position to have recourse to this method.

Riedel believes that all cases should be operated five to ten hours after the onset of abdominal pain. Fatal cases would then disappear entirely from statistics.

Radical Operation of Herniæ in Children.—Maass found a new formed peritoneal sac in 47 out of 66 inguinal hernias and was always able to dissect it bluntly from the other hernial coverings. Even in older children it was unnecessary to narrow the ring. The skin should be sutured completely and covered with collodion. In one case the testicle was removed for necrosis. Torsion and ligation of the neck of the sac are generally impossible in umbilical hernias because the ring is too broad; the tobacco-pouch suture of the peritoneum and ring are best here. In nurslings an operation is not indicated, since spontaneous cure is common and a narcosis is too risky.

Kredel always performs a Bassini or Kocher after ligating the sac.

Karewski never saw a recurrence after simple ligation.

Spitzer operates even under one year. For atrophic nurslings paraffin injections are safer.

Duodeno jejunal Hernia.—Narath places the first case of duodenojejunal hernia, cured by operation, on record. The patient suffered from indefinite abdominal pains, constipation and vomiting and gradual swelling of the abdomen. After years a mass formed in the right parasternal line which was diagnosed as tumor of the gall-bladder or pylorus. When the abdomen was opened the greater part of the intestines was found in the duodenojejunal fossa. After reduction, the opening in the mesocolon was sutured with perfect result.

Pathology and Therapy of Hour-glass Stomach.—A certain degree of atavism is assumed by Wullstein in the genesis of congenital hour-glass stomach, since in certain lower animals the pyloric and cardiac portions are separated by a distinct constriction. In other cases neighboring organs such as the pancreas, celiac, splenic or phrenic vessels may exert pressure during early fetal life. Acquired cases are due to inflammatory changes, trauma, ligamentous adhesions, neoplasms or strictures. Certain rare specimens were then demonstrated. In (1) a peptic ulcer had formed at the isthmus of a congenital hour-glass stomach. In (2) torsion occurred at the isthmus with symptoms of ileus. The cause of the constriction in (3) was a gastro-enterostomy done with a loop of jejunum of insufficient length and in (4) the use of corsets. In (5) the cardiac portion was pulled toward the duodenum and the pyloric was placed underneath the cardiac. A new operation was then described which consisted in rendering the spur projecting into the stomach gangrenous by means of sutures.

Technic of Stomach Operations.—Narath has devised an ingenious instrument, the gastrophor, which takes the place of the assistant who fixed the stomach. It consists of two pairs of arms which can be opened or closed like a forceps. When applied, the raised portion of the stomach is clamped off so that the contents cannot escape after incision. Hemorrhage is avoided and the button cannot fall into the stomach and the operation can be performed more easily and in shorter time.

Peptic Ulcer after Gastro-enterostomy.—Brodnitz demonstrated a specimen obtained from a case of anterior gastro-enterostomy for benign pyloric stenosis. The patient did well until colicky pains made their appearance every night and a painful tumor developed under the scar. The second operation disclosed a large jejunal ulcer opposite to the anastomosis, which had become adherent to the parietes. Fourteen other cases were collected from literature with the following conclusions: (1) Peptic ulcer has only been observed after gastro-enterostomies for benign affections. (2) It may develop with hyperacidity as well as with normal or subnormal acidity, with anterior as well as posterior anastomosis. (3) Sometimes there are no symptoms,

in other cases nocturnal pains. (4) In half of the cases there was a recurrence.

Intestinal Stenosis.—Only tuberculous and cancerous processes play an important part in causing intestinal stenosis, for, while a number of benign conditions may cause a narrowing of the lumen, Haasler points out, that this is generally compensated for so perfectly that no disturbances arise. Where, however, the underlying disease has a progressive character, this power of adaptation is necessarily absent and irreparable stenoses will follow. Multiplicity of stenoses, such as occur in syphilis, may also exclude spontaneous repair.

Intestinal Toxins in Ileus.—P. Clairmont reports the following experiments: The intestinal contents above a stenosis were rendered free from bacteria by filtration and then injected into animals both intravenously and subcutaneously. In all cases death ensued. Bouillon cultures of the intestinal contents, when filtered, had the same action. The toxins were not affected by heat. In half the experiments the toxic action was neutralized by mixing with the normal brain substance of rabbits or guinea-pigs. In some cases a marked hemolytic action toward the blood of dogs and horses was noticed. Neither active nor passive immunization succeeded.

Surgical Treatment of Chronic Dysentery.—In certain obstinate cases of dysentery all medical treatment is without avail, it is then proper to make an artificial anus in the right iliac region so that the large intestine is placed at rest. In J. Steiner's case the large intestine was first thoroughly cleared of mucus and pus by means of 5 to 6 quarts of warm water and then dilute solutions of protargol or tincture of iodine allowed to flow in. It is necessary to examine the fluid washed out from time to time to see if mucus and pus are decreasing. When the ulcers seem to be healed the anus is closed temporarily by means of cotton sponges saturated with vaseline; if no new symptoms develop, the anus is finally sutured. In the speaker's case the treatment had to be continued for eleven months.

(To be Continued.)

BOOK REVIEWS.

The Anatomy of the Human Peritoneum and Abdominal Cavity. Considered from the Standpoint of Development and Comparative Anatomy. By George S. Huntington, M.A., M.D., Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York City. Illustrated with 300 full-page plates containing 582 figures, many in colors. Lea Brothers & Co., Philadelphia and New York.

The appearance of this truly sumptuous volume marks a distinct epoch in the history of American medical literature. To a greater extent than ever before perhaps does it render applicable to practical use the results of a vast amount of research along previously neglected lines. Few books that have appeared in the present generation represent so much individual work of so high an order as does this study of the ontogenetic and phylogenetic relationships of the human abdominal cavity and its contents. In addition to the increased breadth of scope attained by throwing the side lights of embryology and comparative anatomy on the study of adult human morphology, the subject acquires a closer connection with biology at large and a degree of philosophical significance, which greatly enhances the interest of the parent study.

Beginning with a brief résumé of the more important steps in the development of the ovum the author takes up in sequence the comparative anatomy and developmental stages of the foregut and stomach, the spleen, pancreas and liver, the large and small intestine, the ileocolic junction, cecum, and vermiform appendix. The book is not a treatise on comparative anatomy nor a text-book of embryology, but is a complete exposition of the genealogy of each organ and peritoneal fold in man through all the devious steps back to its earliest prototype in the embryonal life of the simplest mammals.

The practical value of the work can hardly be overestimated. Many of the anomalous and perplexing conditions sometimes encountered in abdominal surgery have very simple explanations when their development is considered, and any one who has ever been puzzled by a case of non-rotation of the cecum, a sliding hernia or retroperitoneal appendix will find abundant food for thought in the descriptions here given of the manner of their origin. The peritoneal duplicatures at the duodenojejunal angle and the sigmoid fossæ are subject to variants, which may be of surgical significance, while ignorance of the development of the biliary and pancreatic ducts may lead to serious embarrassment in operating.

The region of the appendix through its somewhat complicated origin abounds in surprises for the inexperienced and a thorough understanding of the possibilities in the way of folds and fossæ makes otherwise difficult operations simple.

Almost equal in value with the text are the illustrations, which have been introduced on a scale seldom attempted in medical books. They are nearly all original and of three types, schematic, drawings of anatomical preparations and photographs. The author's experience as a teacher gives his diagrams unusual point and force, while the resources of the morphological museum of the university have furnished an unexampled wealth of material for use in the preparation of the illustrations.

The work will undoubtedly attract world-wide attention and will enhance the reputation not only of its author and publishers, but of the country that gave it birth.

A Laboratory Text-book of Embryology. By Chas. Sedgewick Minot, LL.D. (Yale), D.Sc. (Oxford), Professor of Histology and Human Embryology in the Harvard Medical School. P. Blakiston's Son & Co., Philadelphia.

Both teachers and students will be inclined to hail the appearance of this volume with satisfaction, for it will greatly lighten the labors of each. Based on the author's well-known and exhaustive Human Embryology, it forms a practical working accessory to that magnificent work, though not in any measure intended to supplant it. For medical men it possesses the virtue of adhering more closely to the development of the human embryo than has usually been deemed feasible in works of this description and throughout the author's object has been to make his teaching subservient to the elucidation of this aspect of the study. The illustrations, so important a feature in treating this subject, are of unusual beauty and perfection of execution, notably the series of plates illustrating reconstructions from sections of the pig embryo of 12 mm., while the excellence of the paper and typography contribute much to the elegant appearance of the book.

The material is arranged on sound pedagogical principles and, as it stands, forms a satisfactory course in embryology. After three sections devoted to general conceptions, the early development of mammals in gen-

eral and of the human embryo in particular, over a hundred pages are given up to a detailed study of the pig embryo to be followed by less extensive sections in the chick and the rabbit. A chapter on the human uterus and fetal appendages and one on laboratory methods completes what is very nearly a perfect book.

A TEXT-BOOK OF SURGERY. For Students and Practitioners. By GEORGE EMERSON BREWER, A.M., M.D., Lecturer on Clinical Surgery at the College of Physicians and Surgeons, Columbia University, New York; Attending Surgeon to the City Hospital, Junior Surgeon to the Roosevelt Hospital, etc. Illustrated with 280 engravings in the text and seven plates in colors and monochrome. Lea Brothers & Co., New York and Philadelphia.

TO CONDENSE a single branch of modern surgery into a book of readable size is in itself a praiseworthy feat—to compress into a small compact volume of 680 pages all the salient features of the entire science is indeed a remarkable achievement. That, precisely, is what the eminent author of this text-book has accomplished. To a man, the profession will be grateful to him for the very important and arduous work he has done. Most particularly, will this be true of all teachers of surgery. There has, indeed, been an almost absolute disregard of the needs of this large and important class by all recent surgical writers. This recognition of their needs will be hailed with cordial approval.

The volume under consideration occupies a most enviable position, in that it enters the field almost without a competitor worthy of the name. Its author's well-known, terse and emphatic style is sponsor for the belief that its field of utility will never be narrowed by future additions to the text.

It is almost superfluous to state that in every department touched upon there is evidence of a breaking loose from the old traditions of surgery, which cling so tenaciously to most surgeries, and a praiseworthy and eminently successful effort made to state the common sense and the truth. With well recognized courtesy, reference is made on all moot questions to opinions of leaders in the department under discussion and yet, although always free from the taint of dogmatism, the book is pre-eminently specific in its instructions. It occupies a happy midground between a narrative of the modern doings in the surgical world and the usual commonplace text-book.

In specific detail, attention should be directed to the lucid and clear-cut chapter on the diseases of the Liver and Biliary Passages. There is no "atmosphere" in the treatment of these intricate problems; the picture presented is what is known among painters as "photographic." Because of the well-known work done by the author in this branch of surgery one would expect such a presentation of the subject, and there is no disappointment.

It is rich in reference to and in interpretation of the most modern and progressive views of surgical principles. The physical appearance of the book is in keeping with its vigorous and explicit trend of thought, it is well illustrated by drawings and photographs. Every desirable new technic is graphically presented; in most cases the drawings being reproductions of the originals presented within a year or so, at the great national society meetings. Thus, on page 324, Finney's operation for pyloroplasty is pictured, after his own pen, and on pages 166, 167 and 168, the Matas operation for the radical cure of aneurism is presented. It is safe to say that these and many other illustrations, which appear in this full little volume, are given to the public under book cover for the first time. This shows how absolutely up-to-date the volume is and how much of the old has been omitted to make room for the new and fresh.

Those who carefully read and follow this text-book, be they students or practitioners, will know more surgery, will do better work and will save more lives for having done so.

BOOKS RECEIVED.

The MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

EUROPEAN IMMIGRATION. Special Consular Reports.

DRUG TRADE IN FOREIGN COUNTRIES. Special Consular Reports. 8vo, 418 pages.

DISPOSAL OF SEWAGE AND GARBAGE IN FOREIGN COUNTRIES. Special Consular Reports. Volume 17.

JOLIFFE. Incidents and peculiar beliefs in Meridional France. By M. Sommerville. 12mo, 214 pages. Drexel Biddle, Philadelphia.

DISEASES OF THE NOSE AND THROAT. By Dr. C. H. Knight. 8vo, 423 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

A NARRATIVE OF MEDICINE IN AMERICA. By Dr. J. G. Mumford. 8vo, 508 pages. J. B. Lippincott & Co., Philadelphia and London.

ELEMENTARY BACTERIOLOGY. By M. L. Dhingra. 8vo, 145 pages. Illustrated. Longmans, Green & Co., New York, London and Bombay.

PRINCIPLES AND PRACTICE OF SURGERY. By Dr. J. T. Vaughan. 8vo, 569 pages. Illustrated. J. B. Lippincott Co., Philadelphia and London.

OBSTETRIC NURSING. By Dr. A. M. Fullerton. 12mo. Sixth revised edition. 270 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

INTRACRANIAL TUMORS AMONG THE INSANE. By Dr. I. W. Blackburn. 8vo, 95 pages. Illustrated. Government Printing Office, Washington, D. C.

NURSE'S GUIDE TO SURGICAL BANDAGING AND DRESSINGS. By Dr. W. J. Smith. 16mo, 162 pages. J. B. Lippincott Co., Philadelphia and London.

PROGRESSIVE MEDICINE. Dr. H. A. Hare. Volume 3. September. 1903. 8vo, 398 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

SCHEME FOR DIFFERENTIAL TESTING OF NERVES AND MUSCLES. By Dr. J. M. Mosher. 8vo, 58 pages. Illustrated. Brandow Printing Co., Albany, N. Y.

JAHRESBERICHT ÜBER DIE FORTSCHRITTE IN DER LEHRE VON DEN PATHOGENEN MIKROORGANISMEN. Vol. 17, 1901, Second Part. 8vo, 1,100 pages. S. Hirzel, Leipzig.

A COMPEND OF DISEASES OF THE SKIN. By Jay F. Schamberg, A.B., M.D. Third edition. 12mo, 291 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

A COMPEND OF HUMAN ANATOMY. By Samuel O. L. Potter, M.A., M.D., M.R.C.P. Lond. Seventh edition, 12mo, 372 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

LATIN GRAMMAR OF PHARMACY AND MEDICINE. By D. H. Robinson. Fourth Edition. Revised by Hannah Oliver. 8vo, 273 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

PRACTICAL MEDICINE SERIES. Volume VII. Pediatrics. Edited by I. A. Abt. Orthopedic Surgery. Edited by John Ridlon. 12mo, 232 pages. Illustrated. The Year Book Publishers, Chicago.

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ORIGINAL ARTICLES.

THE HISTORY OF THE TUBERCULOSIS WORK AT SARANAC LAKE.*

BY E. L. TRUDEAU, M.D.,

OF SARANAC LAKE, N. Y.

THIRTY years ago, when I went into the Adirondack wilderness to try to prolong my life, nothing would have seemed more improbable than that I should have lived to avail myself of the great honor of addressing you on such an occasion as this, or that anything which could occur in a life spent in those remote and primitive surroundings might be considered by the management of the Phipps Institute at all worthy of your attention to-night. I have to offer for your consideration only a brief retrospect of the advance which has been made in our knowledge and treatment of tuberculosis, and of the manner in which this knowledge has been practically applied in meeting the tuberculosis problem as developed, year by year, at Saranac Lake.

In 1873 the medical profession took little interest in the disease known as consumption, and the general public knew little about it except, perhaps, that it was thought to be always inherited and was considered almost invariably fatal. The immediate cause of the disease was unknown, and there was no recognized treatment for it except change of climate, and patients were sent principally to warm climates in a desultory sort of way because they coughed, and nothing that could be done for them at home was of any avail.

Each medical authority held differing and often very decided views as to the relative advantages of various climates; some finding the essential qualities of good climate for the consumptive to be warmth and equability, others laying special stress on dryness or elevation. Nevertheless, little by little it became evident that the great majority of consumptives died wherever they were sent, and the few recoveries which took place occurred in regions which differed entirely as to elevation, temperature, and dryness, and that as many patients recovered in the intense cold and storms of the high Alps and other mountains as in the warm, equable temperature and dryness of atmosphere to be found in such countries as Egypt and the south of France, while cures were reported from time to time in patients who had gone on long sea voyages or remained in indifferent climates where none of the conditions considered essential existed.

Wherever the consumptive was sent by his physician, little or no stress was laid upon regulating the habits of his daily life, beyond a recommendation to live out of doors and to exercise as much as possible, while for medication cod-liver oil and, later, creosote, were generally prescribed. There was little special hospital accommodation for the consumptive. Most hospitals admitted a few cases of tuberculosis to their general wards when they had empty beds, and the larger institutions, like Bellevue and Blackwell's Island in New York, had special wards devoted to consumptives. There were also a few homes for consumptives in existence, but no institution was presumptuous enough to announce that its object in taking these patients was anything beyond affording them a place where they might die. In the consumption hospitals in existence the administration of anodyne cough mixtures, and the keeping of the wards at a given temperature, were the only attempts at treatment, and in order to meet the latter condition and prevent the patients from taking cold the windows were generally kept tightly closed. This condition of affairs has come within my own personal observation in a hospital near Philadelphia.

The climatic treatment was within the reach of only a very small class of patients; namely, the well-to-do; and they were not generally sent away until their physicians or they themselves became alarmed at the activity of their symptoms. The poor, and the large class of men and women who depend upon their daily work for their support, were left to their fate. No special stress was laid on the early recognition of the disease, as it was generally believed to be fatal. This, then, was approximately the attitude of the profession and the public toward tuberculosis when I went to the Adirondacks in 1873.

This region was at the time a real wilderness, visited during the summer months only by a few sportsmen, and it was then that I met Dr. Alfred Loomis, who, in spite of my critical condition, encouraged me in my determination to remain at Paul Smith's during the winter. My good wife cheerfully acquiesced in the plan, in spite of the gloomy prognostications of many medical friends who tried to dissuade me from so rash a step, and it was entirely due to her encouragement and determination that we settled down in 1874 at Paul Smith's, then a small summer hunting lodge, to face the severity of an Adirondack winter, 42 miles from a railroad or a physician, and completely cut off for weeks at a time by the deep snows from any communication with the outer world. The spring found me much improved, and it was owing to the good results in my case, as well as in several other patients whom he sent subsequently to winter in the Adirondacks, that Dr. Loomis published a paper in the *Medical*

* Dr. Trudeau's lecture is the first of a series to be given by the Henry Phipps Institute during the coming winter in the crusade against Tuberculosis. These lectures will be six in number, three of which are to be given by Americans, Doctors Trudeau, Osler and Biggs, and three by Europeans. Those who have accepted from Europe are Dr. Pannwitz, of Germany, and Dr. Maragliano, of Italy.

Record in 1876, drawing attention for the first time to the climatic value of this region for pulmonary invalids. The following winter, and indeed the next 29 winters, have been spent in Saranac Lake, which was then situated 42 miles from the nearest raidroad, and consisted of a saw-mill and half a dozen guides' houses, but which has now grown to be a town of four thousand inhabitants, and is known both here and abroad as a health resort.

Long before this time, as early as 1859, Dr. Brehmer, in Silesia, began to work out the principles on which the Sanitarium treatment of tuberculosis is based, and published several articles on this subject, which, however, attracted but little attention for a long time in Europe, and remained unnoticed in this country, but which have been the foundation upon which the Sanitarium treatment of this disease, now so generally recognized all over the world, has been based.

Brehmer insisted that climate is not the only and all-important factor in treating the disease, and that the consumptive is never injured by exposure to inclement weather, provided he is accustomed to live constantly out of doors; that it is not so much *where* the consumptive lives as *how* he lives that is of the most importance, and that the pulmonary invalid cannot be left safely to his own devices as to his mode of life in any climate. A life spent entirely out of doors, in any kind of weather, good and abundant food and rest and discipline, are the all-important factors to utilize in bringing about a cure.

He demonstrated by the excellent results he obtained that the careful regulation of the patient's daily life (so far as air, food, rest, and exercise are concerned), is necessary, if the best results are to be looked for, and that if this is done for many months a cure may confidently be expected in a fair proportion of cases. Nowhere can this plan be followed thoroughly except in a Sanitarium built for this purpose, and where the patients live with the physician and are constantly under his eye.

The first cottage, Adirondack Cottage Sanitarium, built in 1884.

It is interesting to note that this great advance in the treatment of pulmonary tuberculosis took place before Koch's epoch-marking discovery of the tubercle bacillus, and has been in no way influenced and modified by it. I was greatly impressed with Brehmer's views, and anxious to test his method, the more so as the urgent need of supplying at Saranac Lake a place where per-

sons of moderate means could be properly cared for soon became apparent. Thus, little by little, the idea of starting a sanitarium for working men and women, at a cost to them less than the expense of operating it, began to crystalize in my mind. Dr. Alfred Loomis, whom I saw during the summer at Paul Smith's promised the support of his great name, and offered, should I succeed in establishing such an institution, to examine applicants in New York free of charge, a service which he rendered the institution until his death. The first subscription was given me by Mr. and Mrs. Anson Phelps Stokes, whose ever-helpful interest, as well as that of many of my personal friends, has never failed me through all these years. Thanks to the generous response of these friends, I soon had collected a fund of about $5,000, and having bought, with money donated by guides and residents of Saranac Lake Village, a few acres of land on a sheltered hillside where I had often stood while on my hunting trips, and which seemed eminently suitable for the purpose, I began, in 1884, the erection of two small buildings. Since segregation of patients was the aim held in view, the cottage plan was adopted.

The first cottage consisted of one room, heated by a wood stove and lighted by a kerosene lamp. It accommodated two patients, and cost about $350. It was furnished with a small covered piazza, where, after much persistence and eloquence, I persuaded my first two patients to sit most of the day at rest. This was, as far as I know, the first attempt in America at applying the sanitarium rest and open-air method according to Brehmer's and Dettweiler's teachings, and from this humble beginning the institution gradually and steadily developed until it has become a small village, and the principles of treatment upon which it was founded have gained general acceptance over the entire land. The evolution of the cottage has continued, and the latest cottages are substantial yellow brick and stone structures, costing about $5,000, and accommodating four patients. They are models of convenience and comfort, and are eminently adapted to carrying out the open-air treatment. They are lighted by electricity, heated by hot water and fireplaces, supplied with baths and running water, and each room opens directly on a covered veranda, upon which the patients' beds are easily pushed when ordered temporarily to remain in bed, as well as to sleep out at night.

The Adirondack Cottage Sanitarium in 1886. View showing all the buildings then on the grounds.

Each year as obstacles presented themselves they were overcome, and as needs developed they were supplied. As time passed, the struggling institution needed, in turn, more land, an abundant water supply, good drainage, electric lighting, a crematory for the disposal of infectious material,

an open-air recreation pavilion, many more cottages, a library, a chapel where religious services could be held, and an infirmary where the very sick could be properly nursed, and as the cottages increased in number, a new administration building suited to the enlarged needs of the growing community. As these needs arose, from year to year, they were supplied, thanks to the never-failing generosity of the Sanitarium's friends, until to-day, a small village consisting of twenty-two buildings entirely free from any financial encumbrance, has grown up about the little one-room cottage which still stands as a reminder of the institution's humble beginning.

New problems had constantly to be solved. One of these was the nursing of the acutely ill cases. Though patients when admitted were in such condition as to require nothing more than general supervision, sooner or later after admission some of the complications of the disease, later, the Childs Memorial, put at our disposal buildings where patients could be transferred at once when acutely ill, and furnished every convenience and appliance for carrying out the most approved methods for their nursing and treatment until sufficiently recovered to be returned to their cottages.

The requisites for admission to the Sanitarium have always been that the applicant should be in the earlier stages of the disease, or with a fair chance of more or less complete restoration to health, and that his pecuniary circumstances should be such as to make it impossible for him to pay the usual prices asked at the hotels and boarding houses of the region. The price charged from the first has been five dollars a week, and has remained the same for the past twenty years, in spite of the greatly increased cost of operating the institution due to improved methods and the higher cost of living. Each pa-

Adirondack Cottage Sanitarium in 1900. View looking west, showing less than one-half the buildings on the grounds.

such as hemorrhage, pleurisy, and the tuberculous pneumonias and exacerbations so frequent in this disease, would transform a promising patient, entirely able to care for himself, into a bed-ridden invalid, who needed for weeks or months, both day and night, constant nursing and attention.

During the earliest years of the Sanitarium's existence, when it was still 42 miles from a railroad, no nurses were available, and I had no money to procure them. I had no resident physician and nothing to offer as a salary to one, so that during the summer I had to do the medical work of the institution as best I could, being obliged to drive from Paul Smith's, fourteen miles each way, in order to accomplish this. But the problems were finally solved. A physician was found in ill health himself, who was induced to take up his abode at the Sanitarium, giving what service he could in return for his board and lodging; and the gift of the Hall Memorial, and

tient costs the institution from eight to nine dollars a week, so that there is a deficiency of about four dollars a week on every patient. There are no private patients and no graded rates, every one being on the same basis. No charge is made for medical attendance, and no extra charges except when the patients are so ill as to be confined to bed and taken to the infirmary, thus requiring constantly the services of a nurse, special diet, etc., when the additional regular infirmary charge of five dollars a week is made.

The Sanitarium has also a small Free Bed Fund, the income of which is applied to defray the expenses of patients whose resources have entirely given out.

It took a long time to overcome the prejudice existing in the professional as well as the lay mind against hospitals for consumptives, a prejudice founded at first on the discouraging death rate among patients in such institutions, and, later on, the fear of infection. The excellent results

obtained at the Sanitarium soon overcame the first objection. Dr. Hance's research, which proved that the dust taken from all the buildings at the institution, except in one instance, failed to infect guinea-pigs, and the published fact that ever since the Sanitarium was opened none of our employees or servants has been known to develop consumption, soon proved that the measures adopted to guard against infection there were efficacious for the protection of all residing at the institution. During the first years of the Sanitarium's existence I had much difficulty in filling its few beds, and, on many occasions, it took all my eloquence and persuasive powers to prevent the few patients from deserting on short notice. The education of the public as to the value of sanitarium treatment little by little became apparent, and of late years there has always been a long waiting list. Not one in twenty who apply can be taken, and many institutions like the Sanitarium would be required to accommodate those who constantly knock at its doors.

Abby Sage Richardson Memorial Cottage, Adirondack Cottage Sanitarium, 1902.

The exact results obtained by the combined climatic and sanitarium treatment are difficult to express in figures, because these results are greatly influenced by the class of cases accepted for treatment, and the classification of these cases is purely arbitrary. Many cases, no doubt, would be classed by one physician as incipient and by another as advanced, according to the views held by each as to the disease, and the personal bent of the individual. In addition, the word *cured* can be used only in the relative sense, as we know that relapse is the rule rather than the exception in this disease.

In my report for 1902 we find that of the really incipient cases, which were only 40 in number, 75 per cent. were discharged as apparently cured, 15 per cent. had their disease arrested, and 10 per cent. improved; while of the advanced cases, 99 in number, 12 per cent. were discharged as apparently cured, 57 per cent. with disease arrested, 22 per cent. improved, 8 per cent. failed, and 1 per cent. died in the institution; of the far advanced cases, none was apparently cured, in 33½ per cent. the disease was arrested, 33⅓ per cent. improved, and 33⅓ per cent. failed while under treatment. Thus, for the 165 cases at whatever stage treated during that year, we find that 30 per cent. were discharged as apparently cured, in 41 per cent. the disease was arrested, 19 per cent. improved, 7 per cent. failed, in 2 per cent. the diagnosis was doubtful, and 1 per cent. died in the institution.

To all who are familiar with the relapsing nature of tuberculosis, an inquiry bearing on the permanence of the results obtained, promised most discouraging revelations. Thanks to a most exhaustive and yet unpublished inquiry by Dr. Lawrason Brown, the Resident Physician, as to the permanency of the results obtained by this method of treatment, I am able to present to you to-night accurate information on this all-important subject. From Dr. Brown's exhaustive

study and careful figures, I will quote only briefly:

Of the 1,500 cases under consideration, which have been discharged from two to seventeen years, 434 could not be traced, leaving 1,066 which have been traced. Of these, 46.7 per cent. are living. Of these, 31 per cent. are known to be well at present, in 6.5 per cent. the disease is still arrested, 4 per cent. have relapsed, 5.2 per cent. are chronic invalids, and 53.3 per cent. are dead. As to the influence of the stage of the disease on the permanency of the results obtained, he found 66 per cent. of the 258 incipient cases discharged are well at present. Of the 563 advanced cases 28.6 per cent. are well, and of the far advanced cases 2.5 per cent. only, remain cured.

Thus we learn that 31 per cent. of all cases discharged from two to seventeen years ago have remained well, that 66 per cent. of the incipient cases discharged during the same time continue well at present, and these figures, discouraging as they may seem to those of you who are not familiar with this fatal malady, emphasize the importance of making an early diagnosis, and teach us exactly to what extent we may count on saving and prolonging life by this method of treatment.

The only specific treatment which has been carried on at the Sanitarium has been Koch's tuberculin treatment. It has been used in a limited number of cases ever since Koch first proposed it, in order that some evidence might be obtained as to its specific influence when given under the most favorable conditions of environment and where patients were constantly under medical supervision. Its use has been found inadmissible in the active types of the disease, and has been confined almost entirely to incipient cases and advanced cases of subacute types only. Of the patients selected for tuberculin treatment 29 per cent. were classed as incipient, 63 per cent. as advanced, and 8 per cent. as far advanced.

All the tuberculins prepared by Koch, as well as Hunter's modification, most of which were made in the Saranac Laboratory, have been tested. At present Koch's emulsion of crushed bacilli is being employed in a few cases. I lay before you now the results of my experience with this method, so far as this can be shown briefly by figures. These patients have been discharged for a sufficient length of time to give an idea of the permanency of whatever favorable results have been obtained.

From 1890 to 1901, 143 cases were treated by this method, and of these 58 per cent. are alive, 33 per cent. are dead, and 9 per cent. are untraced. If we now take the 1,367 cases treated at the Sanitarium without tuberculin during the same period of time, we find that 38.9 per cent. are alive, 39.6 are dead, and 21.4 per cent. are untraced. This leaves a considerable percentage of living, 20 per cent. in favor of the tuberculin treated cases, but it would perhaps be a just criticism to say that the value of any deduction based on these figures is impaired by the fact that the tuberculin cases were to a certain extent selected, and for this reason were possibly of a somewhat more favorable type than the general average of the total number treated at the institution during the same period of time which served for comparison. I have therefore procured from Dr. Brown the results in the incipient cases only, treated with and without tuberculin, which were discharged during the same period of time, 1890 to 1901. Of the incipient cases which received no tuberculin 61 per cent. are alive up to date, while of the tuberculin treated incipient cases, 76.7 per cent. are living to-day. Thus it would seem that there is still an appreciable though not very pronounced percentage in favor of the tuberculin treated cases.

But the lives that the Sanitarium has saved and prolonged have not been all that it has accomplished. The hundreds of patients discharged during the past twenty years have been so many missionaries who have scattered over the land, imparting to others the simple but all-important knowledge as to protective measures and hygienic mode of life which they have been so practically taught in the institution. And, besides all this, by affording a scientific demonstration that a fair proportion of tuberculous patients can be cured and restored to lives of usefulness, the Sanitarium has had an influence in bringing about a new attitude of hopefulness towards the disease which has inspired the building of similar institutions.

A cooperative scheme for obtaining employment for patients discharged from the Sanitarium is now on foot, and will soon be tried practically. For this scheme I bespeak your interest, as I feel more patients could be permanently restored if they could procure suitable employment after leaving the Sanitarium.

The responsibility of procuring enough money each year for the support and development of the work has fallen throughout mainly upon me, and the bulk of the burden has been transferred by me to my personal friends, who have never failed to respond to my appeals during these many long years. At first I experienced the greatest difficulty in getting together the comparatively small sums needed, because people then looked upon any attempt to cure tuberculosis with the utmost incredulity, and evidently considered me a well-meaning but impractical enthusiast. The Sanitarium has been throughout essentially an Adirondack charity; that is, it has owed its support almost entirely to visitors who come to the St. Regis and Saranac Lake region, in search of pleasure, recreation, or health. The two fairs held each year at Paul Smith's and the Saranac Inn have supplied a goodly share of the funds necessary to meet the yearly deficit in running expenses. I will not weary you with the financial details of the work. Suffice it to say, that, starting with no other capital but its good cause and its friends, the Sanitarium now represents a plant worth about $350,000 which is paid for; a yearly deficit on running expenses of $7,000 to $20,000 has been met for twenty years entirely by subscriptions, and an Endowment Fund of $200,-

ooo has been little by little put aside, the interest of which has been allowed to accumulate each year, as $400,000 will be needed before the deficit in the running expenses can be even approximately supplied by this fund, and the work established on a permanent financial basis.

The Sanitarium has not paid for all the services rendered there. It never could have accomplished what it has, and its very existence in the earlier years would have been impossible but for the self-sacrificing devotion of its officers and even its employees. The late Dr. Alfred Loomis, and the Examining Physicians in New York, Boston, Philadelphia, Baltimore, and Saranac Lake, have always given their services to the institution without charge. The Trustees, and Mr. D. W. Riddle, the Treasurer, have done the same. The Late Frank Ingersoll, the resident officers, Mrs. Julia Miller, Miss Marguerite DeLong, Miss Collins, and the resident physicians and nurses have given through all these years, of their time, their strength, and even the work of their hands, and received inadequate compensation, and often no remuneration at all. Though the Sanitarium has never had money enough to pay for the services required to do its work, the institution has received throughout all these years the kind of devoted service which no money can command, and which has made its work a benediction to those it has sought to relieve.

In 1882, Robert Koch announced to the world his discovery of the tubercle bacillus. His paper on the Etiology of Tuberculosis (probably the most far-reaching in its importance to the welfare of the human race of any original communication), based on experimental research, at once threw a flood of light on the darkest page in the history of medicine, a light which revealed the microscopic fungus which is the direct cause of tuberculosis, gave a new impulse, and opened a new horizon to medical thought.

As Brehmer's and Dettweiler's writings had furnished me with the incentive to establish the Sanitarium, Koch's paper, an English translation of which was sent me by my friend, Mr. C. M. Lea, was my inspiration to scientific research. In bringing to your notice my first efforts to do scientific work, I quote briefly from a paper read before the Laennec Society of the Johns Hopkins Hospital.*

"I had from the first many difficulties to contend with; no scientific training, no apparatus, no access to books, and the remoteness of my surroundings removed me from contact with medical men to whom I might apply for instruction and help.

"In some of the short visits I was enabled to make to New York, Dr. Prudden taught me how to stain the bacillus, and the first principles of bacteriology, and I taught myself the rest as best I could. My laboratory was a very small room in my house, in which, during the intense cold of winter, water generally froze at night in spite of my best efforts, as we had no coal in Saranac Lake in those days, and the wood stove could not be counted upon to burn all night. I had no apparatus but my microscope. With Dr. Koch's paper as a guide, I succeeded, however, in growing the tubercle bacillus in a homemade thermostat, which had no regulating apparatus, and which was heated by a small kerosene lamp only. In order to protect this from the violent changes of temperature, which occurred principally at night, I had enclosed it in a series of wooden boxes, the doors of which could be opened or closed at will, according to the intensity of the cold out of doors. But on very cold nights I was obliged to get up in the night to make a fire in the stove in order to prevent too violent changes of temperature in my little oven.

"With these primitive arrangements, after many failures, I obtained the tubercle bacillus in pure cultures, being, I believe, the second observer in America to do this. With these cultures I repeated all of Koch's inoculation experiments. My guinea-pigs had to be kept in a hole under ground, heated by a kerosene lamp, this being the only spot in Saranac Lake where they could escape freezing at night.

"In 1886, I studied the influence of extremes of environment in the course of inoculation tuberculosis. Many of my inoculated rabbits allowed to run wild on an island recovered or developed only localized disease, while those placed under the most unhygienic conditions I could devise died of tuberculosis in a few months. The results of this research increased my confidence in the influence of a favorable environment on the course of the disease, and confirmed my faith in the value of the sanitarium and open-air method of treating tuberculosis, of which I was then making a practical application in the establishment of the Adirondack Sanitarium.

"During the same week in which Koch's announcement of the discovery of tuberculin and of his hopes as to its specific curative action on tuberculosis, was flashed across the ocean and created in medical circles an excitement which has never been equaled, I published in the *Medical Record* an article describing my attempts at the production of artificial immunity in animals by the injections of sterilized and filtered liquid cultures of the tubercle bacillus (tuberculin), and my failure to obtain any appreciable degree of immunity by this method.

"About this time, while ill in New York, my house burned to the ground, the fire having originated during the night from the explosion of the kerosene lamp of the thermostat in my little laboratory, and everything in the house and laboratory proved a total loss. Two days after the fire I received from Dr. Osler a brief note, which shows that his great reputation should not be limited to his attainments as a physician, but that he may lay claim also to some reputation as a prophet. The entire substance of the note was as follows:

"'Dear Trudeau.—I am sorry to hear of your misfortune, but, take my word for it, there is nothing like a fire to make a man do the Phoenix trick.'

* Bulletin of the Johns Hopkins Hospital, September, 1901.

"Dr. Osler's prophecy very soon began to be realized. A friend and patient of mine, Mr. George C. Cooper, called on me the day after the fire, and after expressing his sympathy, told me that as soon as I was well enough he hoped I would return to Saranac Lake and build a suitable laboratory, one that could not burn down; that he wanted me to build the best I could plan for the purpose, and that he would pay for it.

"The building is of cut stone, slate, glazed brick, and steel, completely fireproof, lighted by electricity, heated by hot water, supplied with its own gas machine for the thermostats, Bunsen burners and sterilizers, and furnished with every

Exterior of Laboratory.

appliance for bacteriological and chemical work. It has a library which was donated by the late Horatio Garrett, of Baltimore, while the continuance of the experimental work so far has been made possible through the generosity of the late Mr. George Cooper, the late Miss Cooper, Mr. John Garrett, Mrs. A. A. Anderson, and others, who from time to time have given sums of money to defray the necessary expenses." The expenses of the work during the past year were entirely defrayed by Mrs. A. A. Anderson.

Time will allow me only to touch on a few points relating to the work of the Laboratory. A good deal of the work of the Laboratory has been devoted to testing experimentally proposed specific methods of treatment and consumption cures, and the fallacies of all methods which aim at the destruction of the tubercle bacillus in the living tissues by germicidal agents was soon demonstrated. The next phase of our work was that which was devoted to attempts at the production of immunity by injections of sterilized cultures and the toxines of the tubercle bacillus, and to the manufacture and testing on animals of all these products, whether proposed by others or of our own manufacture.

We gradually reached the conclusion that a certain degree of toxin immunity could be produced, but that this of itself did not protect animals against inoculation with living virulent bacilli. The tuberculin test and the mechanism of the tuberculin reaction have formed the subject of many of our studies which have tended to demonstrate the reliability of the tuberculin test and its apparent freedom from dangerous after-effects. The chemistry of the tubercle bacillus has also been the subject of many researches by my associates, and the results have been published from time to time.

Most of my own work has been devoted to the study of methods which might tend to produce artificial immunity. I learned by practical ex-

perience that toxine immunity and bacterial immunity in tuberculosis do not go hand in hand. While I could accustom my animals by gradually increased doses at intervals to bear with impunity amounts of tuberculin and other toxic products of the tubercle bacillus which at first would have proved fatal, I found that this toxine immunization did not protect the animal against the invasion of his tissues by living virulent bacilli when subsequently inoculated. It was only when I began to make use of living cultures as a protective inoculation that I met with any encouraging results, and my experience would indicate that the living germ is essential to what success has been attained in the production of artificial immunity against tuberculosis.

Interior of Laboratory.

By preventive inoculations of living bird tubercle bacilli in rabbits, I got undoubted evidence of a marked degree of artificial immunity in experiments which I reported to the Association of American Physicians in May, 1893. I was able then to demonstrate to the Association by means of living animals that in the rabbits having previously received the preventive injections of living bird bacilli, the virulent inoculation at first gave rise to a violent reaction of the tissues, which ended generally in cure, while the tuberculous process similarly induced in the controls was steadily progressive, though at first it was accompanied by little or no local reaction. I have many times since confirmed these results by various experiments.

De Schweinitz, McFadyean, and Pearson and Gilliland, in this country, and Behring, Koch, Maragliano, and Neufeld, abroad, have since from time to time reported success in protecting animals, principally cattle, by preventive inoculations, and in producing a very marked degree of artificial immunity in these animals.

Behring's immunized calves not only failed to

become infected when placed in infected stables where the control animals all quickly developed tuberculosis, but they resisted intravenous inoculations of virulent bacilli to which control animals rapidly succumbed. These facts would make it appear that artificial immunity to tuberculosis is perhaps not as Utopian a dream as it has hitherto always been considered.

The excellent opportunities for original investigation which the Laboratory affords, have always been freely put at the disposal of any medical man desiring to make researches bearing on the etiology, bacteriology, or chemistry of tuberculosis, or to test experimentally proposed specific methods of treatment. The original work accomplished in this way in the Laboratory by my colleagues and myself has been published from time to time during the past twelve or fifteen years in various medical journals, and comprises some thirty-seven papers, sixteen by my colleagues, and twenty-one by myself, but time will not permit me to review this work at present.

The Saranac Laboratory was the first laboratory in this country devoted to original researches in tuberculosis. It has no endowment, has been and still is dependent each year on my own efforts to obtain the funds necessary for the continuance of its work. The same self-sacrificing devotion which has been so helpful a feature of the work of my associates at the Sanitarium for the past twenty years has always been given without stint by my colleagues in the Laboratory, and in the face of many discouragements and difficulties has alone made possible the continuance of what researches have been carried on there.

It was not only, however, at the Sanitarium and the Laboratory that the tuberculosis problem had to be met, but the village of Saranac Lake has been constantly called upon to adapt itself to new conditions, which have transformed it from a guides' settlement to a busy town and much frequented health resort. For twenty years an ever increasing number of invalids has been steadily settling down in Saranac Lake, and the town has now practically developed into a cottage sanitarium on a large scale in order to meet the requirements of an ever-growing invalid population, belonging to all classes of society, from the affluent to the penniless consumptive. For the rich, it now affords beautiful and even luxurious homes, which have been designed and built with a special view to the hygienic care and requirements of the invalid, and for carrying out with the greatest convenience and comfort the open-air method of treatment in the rigorous climate of these mountains. These features are to be found more or less perfectly developed even in the more humble boarding places which abound in the town.

An efficient Board of Health has instituted modern methods of guarding against infection. Rules and regulations to that effect are exposed in public places, and enforced as far as practicable in the town, and disinfection and fumigation of rooms recently occupied by the sick is made compulsory. There is still much to be done in this direction, but much has been accomplished already.

The residents of Saranac Lake have not been unmindful of the poor consumptive whose name is legion. The district nurse, whose expenses are defrayed by the benevolent, is constantly occupied in instructing and nursing those who are too sick to properly care for themselves, and when death comes, as it often does to the lonely consumptive far away from home and without friends, the same charitable spirit which has tried to relieve his lot provides him with a decent burial. How little those who so often speak disparagingly of Saranac Lake because it harbors so many invalids, know of the burden of human misery, not its own, which this small and remote town has ministered to as best it could for so many years. The Sanitarium has also done its share in trying to help those to whom it cannot open its doors.

A Bureau of Information is supported by the institution in the town, and assists rejected candidates to find cheap boarding places, and a free dispensary is maintained at the town office of the Sanitarium where medical advice is given free of charge daily by my associates to those who apply. This branch of its work is growing so rapidly as to be a severe tax already on the time and strength of these physicians.

Before leaving the subject I must call your attention to one more merciful work which has been done at Saranac Lake for the consumptive; namely, the Reception Cottage. This cottage has been established by Miss Mary R. Prescott, and is maintained by her generosity. It is in charge of a devoted trained nurse, and here a few acutely ill or advanced cases, who cannot be taken at the Sanitarium, are often refused at the boarding houses, and who are in need of constant nursing which they cannot afford to procure, are taken and cared for at a very moderate cost.

Saranac Lake has had, perhaps, no more illustrious visitor, or at least, none in whom the public took a deeper interest, than Robert Louis Stevenson, and Mr. Baker's Cottage in the outskirts of the village, where he spent the fall and winter of 1889, has become an object of historical interest. In its little sitting-room Stevenson received the visits of many prominent men who journeyed to Saranac Lake to see him, and it was in this room, on a cold winter night, by the light of the wood fire in the big fireplace, while Stevenson sat on a chair placed on top of the table which had been moved into a corner, that Richard Mansfield delighted the great author with his weird and gruesome impersonation of "Dr. Jekyll" and "Mr. Hyde."

To a temperament like Stevenson's, who shrank from the grim, inexorable facts of life, and lived in an ideal world, painted and peopled by his own vivid imagination, who craved sunshine, blue skies, and tropical seas and verdure, Saranac Lake in winter, with its ice and snow, its gray skies, and its ever-present and ubiquitous prob-

lem of human suffering and sorrow, did not especially appeal, but he acknowledged to me, and in his writings also, that his health was much benefited by his stay there.

He naturally looked with repugnance on the exact and uncompromising methods of scientific research and animal experimentation, and we had many heated arguments on this subject. I finally persuaded him one day to visit the little room in my cottage which was then my only laboratory. He had just written for *Scribner's* a short essay entitled, "The Lantern Bearers," in which some of his beautiful thoughts had as a text a game he and the other boys played, and which consisted simply of walking along the beach on a dark night, hiding under their coats a lantern, which was only flashed at each other as they passed as a signal. I was intent on showing him my animals and culture tubes, and the ravages which are caused by the tubercle bacillus in the organs of animals, and was trying to impress upon him the possibilities which lay in these experiments in advancing our knowledge of a germ which kills one in seven of the human race, when suddenly I noticed that he looked pale, was not listening, and was edging toward the door as fast as possible. As soon as he got outside he turned to me and said, "Trudeau, your lantern may be very bright to you, but to me it smells of oil like the mischief." It was evident that neither of us could fully appreciate the brightness of each other's lantern, though we both tried.

In looking backward over the development of the tuberculosis problem we cannot but be struck with the marked change that has been wrought in the attitude of both the profession and the laity towards this disease. Twenty-five years ago it was one of hopeless indifference, to-day it is one of hopeful expectancy and interest. This has been brought about principally by the work of two men, Brehmer and Koch. Brehmer taught us the value of sanitarium methods, and the great principles which underlie the open-air treatment of tuberculosis. At that time the consumption hospitals and the wards for consumptives in general hospitals were so depressing a spectacle, and their death rate so appalling, that they were frequently given up, and their establishment discouraged by the profession as useless and only likely to shorten the consumptive's life. To-day we know that we can save one-third of all cases received for treatment at a modern sanitarium, and I have shown you evidence that the cures thus wrought are much more than temporary.

Over the doors of the wards and hospitals for consumptives, twenty-five years ago, might well have been written these words: "All hope abandon ye that enter here," while to-day, in the light of the new knowledge, we may justly place at the entrance of the modern sanitarium the more hopeful inscription, "Cure sometimes, relieve often, comfort always."

Before Koch's great discovery of the tubercle bacillus, we were ignorant as to the cause of tuberculosis and the method of its propagation, and helpless to do anything to stay its spread. Henceforth, tuberculosis is no longer a mysterious and intangible entity which slays its myriads of victims by unknown means, but we possess in the tubercle bacillus the specific agent which produces the disease. We can detect its presence in the various secretions of suspected cases, and thus discover the true nature of the malady and guard against the spread of the disease by simple and practical means. We can grow the germs in our laboratories, study the poison and watch the mechanism of its action in the bodies of living animals, and beyond all, lies the hope that further knowledge gained along these lines in the laboratory as to the conditions which favor or retard its growth in the body, and which produce artificially increased resistance in the living organism, may some day lead to a specific method of treatment which will render both men and animals more resistent to its destructive influence.

The tuberculosis problem, as it has been developed at Saranac Lake, is instructive, because it has been carried on from the first practically along the three lines which must be followed in the future struggle with the disease by other communities, namely prevention, treatment, and study. In the town and at the Sanitarium by education of the invalid, by the Health Board's regulations, and the disinfection of infected surroundings, by the intelligent care of the very sick in the Sanitarium Infirmary, and in the boarding houses and at the Reception Cottage, prevention has found its practical application. Treatment has made for itself a brilliant field in the development of the Sanitarium methods and the application of these methods to patients in the town, while the study of tuberculosis in its scientific aspect has interruptedly gone on at the Laboratory, and to this latter department of the work must we look with hope for increased knowledge to aid us in our struggle with the disease.

I have tried, however, imperfectly, to describe to you, how, in the midst of these remote surroundings, the tuberculosis problem has been practically met. While engaged in this work and in meeting our own local problems, my associates and I have witnessed the general spread of the new knowledge and its application by others to the needs of great communities all over the land, the building of many private sanitariums, and the growing feeling of hopefulness which of late years has enlisted the co-operation of the State, the philanthropist, the medical profession, and the laity.

To the labors of Flick in Philadelphia and Biggs in New York City are due the framing, adoption, and development of the more practical measures of prevention which already have lowered appreciably the death rate from tuberculosis in New York City, and promise in the future, as they are further developed and more generally adopted, even more brilliant results. Meanwhile experimental research and laboratory methods have steadily added to our scientific knowledge of the disease, and constantly taught us new facts which have been at once applied practically to its prevention and early detection, while the re-

searches of Koch, Behring, Maragliano, and Neufeld, abroad, and of De Schweinitz, McFadyean, Pearson and Gilliland, and myself in this country, have already brought forward evidence that a marked degree of artificial immunity against tuberculosis can be produced in animals, and the success already obtained in this direction seems sufficient to justify the hope that prevention may some day find a most efficient ally in the discovery of some safe method of immunization applicable to man.

Within the year comes the announcement that a large-hearted man has donated to science and philanthropy a princely sum from the fortune he has acquired in a successful life of business activity, and aided by men of science, has founded the Henry Phipps Institute for the Prevention, Treatment, and Study of Tuberculosis, under whose auspices we are gathered here to-night. No one, I am sure, can wish this great work Godspeed more earnestly than I do, or appreciate more thoroughly the glorious future that opens before it in the advancement of knowledge and the relief of human suffering.

CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS.

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This condition, to which attention has been especially directed during recent years, has been described in the older records as "scirrhus of the pylorus." Dr. Osler calls attention to a case which he had found recorded in 1788 in the Transactions of the New Haven Medical Association. The case was reported by Dr. Hezekiah Beardsley as one of "Scirrhus of the Pylorus in an Infant." The symptoms noted are constant vomiting, the leanness and the wizened old look of the child. The necropsy showed a dilated and hypertrophied stomach. "The pylorus was invested with a hard compact substance or scirrhosity which so completely obstructed the passage into the duodenum as to admit with the greatest difficulty the finest fluid." (Osler, *Boston Medical and Surgical Journal*, March 12, 1903.)

Dr. John Thomson, of Edinburgh, who has observed 11 cases since 1894, has drawn attention to two early records; the one by Williamson (*London and Edinburgh Monthly Journal of Medical Science*, 1841, p. 23), the second by Dawosky (*Caspar's Wochenschrift*, 1842, No. 7). The title of Williamson's paper was "A Case of Scirrhus of the Stomach, Probably Congenital;" of Dawosky's "A Case of Hypertrophy of the Submucous Cellular Tissue of the Pylorus in an Infant Six Weeks Old." These early records, however, sank out of remembrance and were only recalled after the description of two cases by Hirschsprung of Copenhagen in 1888.

The condition is one to which many names have been given. Hirschsprung entitled his paper "Congenital Stenosis of the Pylorus." Newton Pitt used the term "hypertrophy of the pylorus." J. Thomson in his second publication called the condition "congenital gastric spasm." De Bruyn Kops related one case as an example of "congenital tumor of the pylorus."

During the last five years, and especially during the last two years, the condition has been recognized with rapidly increasing frequency. From being one of the freaks of medicine having little more than pathological interest, it has now become a well-established clinical entity. The disease indeed is probably not uncommon, for it is more than possible, that many children who have been certified as dying from marasmus, vomiting or even intestinal obstruction have, in truth, been its victims.

Symptoms.—The symptoms of the disease are strikingly similar in the majority of the recorded cases. The child at birth is a well-nourished, healthy baby, of normal weight. Soon after birth, sometimes within the first day or two, sometimes not until two, three, or even four weeks have elapsed it is noticed that the child begins to vomit after its food. At the first it is only after the completion of a meal, or toward the end, that the food is returned. The quantity vomited is only small, but it increases day by day. It may then be observed that if only a small quantity of food is given it is retained, a larger quantity is at once rejected. An alteration of the food from breast milk to peptonized milk or to diluted cow's milk is of little or no avail in checking the vomiting. The change may seem to answer for the first meal, or even for all the meals of the first day, but soon the vomiting returns. As day succeeds day, the quantity of food that will excite vomiting gradually lessens, until, finally, even a teaspoonful of milk or water will return. The vomited matters very slightly altered from their condition when swallowed, a little mucus alone is added. Bile is never present in the vomit. When the vomiting is thoroughly established as an enduring symptom its violence is remarkable. As soon as the fluid is taken it is instantly ejected with considerable force. Thomson calls attention to the circumstance that when the stomach tube is periodically passed the fact is revealed that when the fluid is not vomited, it is often retained for long periods in the stomach unabsorbed, thus seeming to indicate not only that the pylorus is impassable, but that there is something interfering with the absorption of fluids by the stomach. The condition of the child changes progressively for the worse. Weight is steadily lost, a few ounces daily, until finally the child may weigh little more than three, or perhaps four pounds. The little face is pinched and shrunken, the child looks wizened and old and the whole body is parched. The temperature is constantly subnormal. Constipation is almost invariable, the bowels do not empty because they are never filled. The mouth and tongue remain clean and moist, as a rule.

If the abdomen be examined at the first, little

or nothing may be found, but when the symptoms have been present for a few days, the outline of the stomach may be clearly seen. Faint waves of contraction, daily increasing in vigor, may pass across the stomach from left to right. At the plyorus a tumor may be felt. The tumor is hard, cylindrical, easily movable, and it lies transversely in the epigastrium. It may at times be difficult or impossible to discover owing to the shelter it receives from the liver. An examination under an anesthetic will then disclose it. The stomach is, as a rule, dilated. In one case, related by Cautley and Dent, it is said that "the stomach was dilated and peristaltic movements could be seen passing onward to the pylorus, there pausing, and then continuing downward down the duodenum. Deep down under the liver at the point of temporary pause in the peristaltic wave could be felt an ill-defined, rounded, movable tumor." The intestines soon become collapsed, and the contrast then between the dilated and thickened stomach projecting forward in the epigastrium and the sunken hollowed abdomen, has excited frequent comment. From this account it may be gathered that there is, in the early stages, very considerable difficulty in the diagnosis. Vomiting in the young infant is so common a symptom that but little interest is aroused by it. Nevertheless the persistence of vomiting for a few days should excite suspicion. If the vomiting be found to occur soon after a meal, and especially after a large meal or a meal quickly taken; if all fluids are alike rejected; if constipation be present, and if, on examination of the abdomen it be found shrunken and hollow, and the stomach be seen to be dilated or hypertrophied with visible waves of peristalsis hastening across it, and if, finally, a transverse epigastric tumor be found, the diagnosis of pyloric stenosis can no longer be in doubt.

Morbid Anatomy.—The appearances presented on post-mortem examination are almost precisely similar in all cases. The stomach is large, and its walls are thickened by a hypertrophy of the muscular fibers. The pyloric region is greatly altered and shows a funnel-shaped circular thickening. When handled it feels like a solid cylinder, hard and incompressible. On cutting through it the walls are seen to be very thick and dense. The mucous membrane lining the pylorus is thrown into longitudinal folds. Cautley and Dent remark that "A single longitudinal reduplication of the mucous membrane, much more marked than any other fold, forms a conspicuous feature in many of the specimens. This prominent fold in its appearance may be compared to the verumontanum of the male urethra. Indeed, these stomachs in appearance and feel curiously resemble the dissected out bladder and prostate, the latter being comparable to the thickened pyloric portion." Several writers have noticed that if the duodenum be opened and the pylorus inspected from its distal side, the appearances presented resemble very closely the cervix uteri seen from below. There is a central opening and around it a thick hard circular band. On making a section of the pylorus, it is seen that the thickening is due to an enormous hypertrophy, or hyperplasia rather, of the circular muscular fibers. This thickening is chiefly limited to the pylorus, but it may extend onward a little way in the duodenum. The longitudinal muscular fibers are not as a rule much affected, though a slight increase may be observed. Finkelstein in one case attributed the whole thickening to an increase in this layer. The submucous layer was in one instance found, by Thomson, to be greatly increased in amount. If the stomach and duodenum be examined before removal from the body it will be found that though fluid may be present in fair quantity in the stomach it is not possible to force any through the pylorus into the duodenum. To the passage of fluid the pylorus is completely blocked, though a fine probe may pass readily enough. The serous and mucous coats are generally unimpaired. The walls of the stomach at the cardiac end are rarely thickened; Thomson says that they are as thin as, or thinner than usual. In some few cases, however, the coats of the whole of the stomach and of the lower part of the esophagus also have been thickened and the muscular fibers grossly hypertrophied.

Etiology.—No very satisfactory explanation of the causation of the condition has yet been given. The muscular hyperplasia it is thought, may be *primary*, a local overgrowth, or *secondary*, due to disturbances elsewhere, which result in spasm. The arguments on either side are not convincing, and for the present at least our judgment in the matter must be suspended. Dr. Cautley who supports the view that the hyperplasia is primary and is due to a simple redundance of growth says "Nature in her extreme anxiety to provide an efficient pyloric sphincter has overtaxed herself, and produced too great a quantity of muscular tissue." One observation which would seem to give support to this theory has been made in some few cases. It is that when the child dies at an early age, between the third and fourth weeks, the amount of hypertrophy found may be far greater than could have been produced since birth. If the pyloric hypertrophy and stenosis existed at birth they could only have been formed as a primary developmental exuberance, or have been caused by spasm, excited when amniotic fluid was swallowed by the fetus. And in favor of this latter possibility there is no tangible evidence. It is important to note that the condition of pyloric hypertrophy has never yet been observed in the fetus. Dr. J. W. Ballantyne, whose experience of fetal pathology is unrivaled, has never once met with this abnormality in all the number of malformed fetuses which he has examined. Henschel has reported three cases occurring in the same family, a remarkable occurrence suggesting the probability of some congenital dystrophy. Dr. John Thomson is the originator and the foremost exponent of the theory that the hypertrophy is secondary. He

has described two cases of the disease under the title "congenital gastric spasm." He considers that there is both a structural and a functional change in these cases. The essential structural change consists in true hypertrophy of the muscular coat of the pylorus, stomach, and sometimes also of the esophagus. The other changes found, the narrowing of the lumen of the pylorus, and the dilatation of the stomach and esophagus are secondary. The main functional abnormality consists in a tendency to spasmodic closure of the thickened pylorus, which prevents the normal periodic opening to allow of the onward passage of food. Dr. Thomson says that there is no symptom characteristic of these cases which may not be regarded with great probability as the result of the excessive, ill-timed, spasmodic contraction of the hypertrophied muscular apparatus of the pylorus, stomach and esophagus. In support of this theory he refers to certain facts which seem to him to throw some light upon the matter. These are:

1. The comparatively isolated character of this malformation which tells against its being really a teratological malformation. In all the recorded cases there were only six which showed other congenital defects or aberrations.

2. The prominence of the spasmodic element in the symptoms after birth, which suggests the probability of a similar spasm in utero. As great muscular hypertrophy is the main anatomical, so spasmodic contraction of the stomach seems to be the main clinical, feature in these cases.

3. The apparent continued growth in size of the pylorus after birth, while the symptoms last, which suggests the probability of a similar growth in fetal life.

4. The gradual disappearance of the symptoms in some cases, while there is reason to believe that the anatomical condition remains unchanged (see the record of Batten's case later); and the immediate improvement after stretching of the pylorus in others, which are points in favor of a functional causation.

The whole question as to the etiology of this disease will require further investigation in the light of a wider experience. It is perhaps not irrelevant to mention that spasm at the pylorus, and in the body of the stomach, is a condition which can be seen from time to time on the operation table. In some cases the muscle as it contracts may so stiffen and harden the pylorus in cramp, that a tumor, palpable through the abdominal wall, is produced.

Treatment.—In the earlier stages of the disease, before the vomiting has become incessant, much good may be done by careful washing of the stomach, and feeding in small quantities through an india-rubber catheter. A doubt may perhaps at first be felt as to the accuracy of the diagnosis in cases which recover under this treatment, but the doubt is not valid. A series of cases are now recorded, three by Finkelstein from the private practice of Professor Heubner, and isolated examples by F. E. Batten, Coates, Still, Senator and others, which prove beyond dispute that the condition is not necessarily fatal. Batten's patient was a male infant eleven weeks old, weighing 7¼ pounds. Up to the age of five weeks the child was quite well. Vomiting then began, increased in force and frequency, and resulted in such an enfeebled wasted condition that the child was thought, after consultation with a surgeon, to be unfitted to bear an operation. A diagnosis of pyloric hypertrophy was made from the following points: (1) a healthy baby at birth, (2) vomiting, (3) constipation, (4) subnormal temperature in the rectum, (5) wasting, (6) marked dilatation and peristalsis of the stomach, (7) a tumor in the position of the pylorus, (8) absence of the usual signs of gastritis.

The little child was fed by a nasal tube and the stomach was cleansed by washing. The treatment was begun in December, 1898. In May, 1899, the patient weighed 16 pounds. In August an attack of acute gastro-enteritis with bronchopneumonia proved fatal. At the post-mortem a hypertrophied pylorus and stomach were found.

A clearer proof of the possibility of the subsidence of symptoms under treatment and of recovery could not be needed. In feeding the little sufferers from this disease, it is better to pass an india-rubber catheter and gently to wash out the stomach with a little sterile salt solution before introducing the food. The best food is probably diluted and sweetened cow's milk. It should be given in small quantities of two ounces or slightly more, and be gradually increased as experience may sanction. The catheter may be passed through the nose, and the sucking action, which is the starting of a peristaltic wave, thereby avoided. If all goes well for eight or ten days, an attempt may be made to feed the child by the mouth, either by teat or with a spoon. If the food is quietly retained the nasal feeding may be gradually abandoned.

Despite the fact that recovery from this condition, under medical treatment on the plan just described, is possible, there will doubtless remain a large proportion of cases that can only be dealt with satisfactorily by surgical measures. Many cases have already been treated by operation, and varying opinions as to the most appropriate means to be adopted have been discussed. The operations which have been performed are Loreta's operation, dilatation of the pylorus, pyloroplasty, gastro-enterostomy, and pylorectomy. The latter is so obviously unsuited to the tender age, and the prostrate condition of the infant, that, as equally effective methods of overcoming the mechanical ostruction exist, it is not worthy of further thought. The operations of pylorodiosis, pyloroplasty and gastro-enterostomy have each been performed on several occasions and their relative merits have not, as yet, been definitely determined.

Lorcta's operation, pylorodiosis, consists in opening the stomach by a small incision near the pylorus, and through this incision introducing a

small pair of forceps which is passed through the stenosed pyloric orifice. The blades of the forceps are then gently separated and the tissues around them stretched as widely as is possible without rupturing the serous coat. In one case, related by Harold Stiles, a rupture of the duodenum was produced by the forcible dilatation, and the little patient died from peritonitis. In two other cases Stiles dilated by means of tracheal dilators with a satisfactory result. Burghard prefers this operation on account of its ease, the rapidity with which it can be performed, and the absence of shock. He employs Hegar's dilators. In one case a rupture of the peritoneal coat was produced. The disadvantage of the operation would appear to be the likelihood of a recurrence of symptoms after the paralysis of the pyloric sphincter has passed away. Experience has shown that when the sphincter ani, for example, is stretched to its utmost limit, a fair degree of control is estabiished by the third or fourth day. But it must be admitted that in all the patients who have recovered from the operation the after results seem to have been most satisfactory.

Pyloroplasty has been practised and especially advocated by Clinton Dent. He believes that pyloroplasty is preferable to dilatation for the following reasons: (1) It can be done at least as quickly; (2) it is a more definite proceeding, and allows more range, as the length of incision can be graduated acording to the condition found; (3) the lumen of the tube can be examined, and if thought desirable, the longitudinal fold of mucous membrane can be removed; (4) the exact amount of injury done to the parts is known.

Pyloroplasty in the adult has been found to be on the whole an unsatisfactory operation, partly because a very striking tendency to subsequent narrowing has been observed, and partly because the formation of adhesions of the sutured line to the abdominal wall, omentum, liver, etc., crippling the stomach in its action, has been frequently noticed.

Clinton Dent records two cases of pyloroplasty. The first operation was performed on June 10, 1902. The patient, a boy, was born on April 14. Vomiting began at the age of three weeks and persisted. When seven weeks old a dilated stomach showing visible peristalsis was seen. After the operation a teaspoonful of hot water was given by the mouth every quarter of an hour; then he received a like quantity of whey, the amount being doubled forty-eight hours later. The vomiting continued after the operation, and up to the time of discharge the patient "was occasionally a little sick."

Eight days after the operation the child weighed exactly a pound more than he did the day before operation, but "some of the gain was due to edema." The child was discharged on July 6, weighing an ounce less than on admission. The food passed readily through the pylorus and was taken eagerly and without vomiting. On July 29 he was readmitted for an attack of diarrhea due to unsuitable food. Under treatment he improved gradually until September 3, when his weight was 9 pounds 10 ounces, and he "looked well and happy." On September 9 the little patient died from zymotic enteritis. Dent adds "the case may fairly be claimed as one of recovery from the original mischief." No postmortem report is given.

The influence of the operation, pyloroplasty, upon the recovery of this patient is perhaps open to question. The vomiting continued after the operation to such an extent that practically all that was given by the mouth was returned. It might well be urged that if the child had been submitted to the dietary discipline that followed the operation, without the pyloroplasty having been performed, an equally satisfactory "recovery from the original mischief" might have been attained.

The second case operated upon by Clinton Dent made a perfect recovery. The following are the notes: The patient, a boy, was born on July 6, 1902, and weighed 10 pounds. He was the third child, the two previous boys being strong and well. From the first the mother noticed that he did not take the breast readily like the previous children, and that he was soon satisfied. On July 27 he weighed 10 pounds 6 ounces, but he then started severe vomiting and lost 12 ounces in four days. At first the vomiting was very bad everything being brought up in from ten minutes to an hour. The stools were variable and not noticed to be markedly small. During the first ten days of life he was breast-fed and then for a short period he was partially bottle-fed on account of pyrexia and a tender breast in the mother. On August 13 he was seen in consultation with Dr. James Morrison who had recognized the presence of some obstruction. The child looked ill, the eyes were sunken, the tongue was clean, and the weight was 9 pounds 6 ounces. The stomach was dilated and peristaltic movements could be seen passing onward to the pylorus, there pausing, and then continuing onward down the duodenum. Deep down under the liver at the point of temporary pause in the peristaltic wave could be felt an ill-defined, rounded, movable tumor. The last stool was greenish and contained a little fecal matter. Temporary measures in the way of diet and drugs were tried for a few days, but as the child steadily lost ground and the vomiting was characteristic, pyloroplasty was performed by Mr. Dent on August 19. A little altered blood was brought up during the next night. Fecal matter was passed on the third day and on August 28 the child was gaining weight. During the next four weeks he gained no less than 8 pounds. His recovery was steady and uneventful. The postoperative treatment and feeding were conducted on the same lines as in the other case.

Gastro-enterostomy was first performed by W. Abel; the patient was a male eight weeks old, upon whom anterior gastro-enterostomy was successfully performed. Kehr relates two successful cases and Monnier one. Fatal cases

are recorded by Meltzer, Stern, Adler and others.

The anastomosis between the stomach and the jejunum may be made upon the anterior or the posterior surface. Posterior gastro-enterostomy in adults is now the operation most frequently selected. Its disadvantages are said to be the greater length of time required for its performance and the greater exposure of viscera. Neither of these objections is sound. A considerable experience of the operation entitles me to say that no more than half an hour need ever be expended in the operation. In desperate cases twenty minutes will be adequate to allow of its careful completion. During the operation there need be absolutely no exposure of the viscera, only those parts of the stomach and jejunum which are to be united lie outside the abdomen. The soiling of the peritoneum is certainly less in gastro-enterostomy than in either pyloroplasty or in Loreta's operation, and there is no blood lost from the cut vessels of the stomach. It is certainly necessary in the early stages of the operation of gastro-enterostomy to handle the stomach and to prepare it for the application of the clamp, if clamps are employed, whereas in pyloroplasty the stomach need hardly be touched and the intestines are not seen.

Which of the three operations, pyloroplasty, pylorodiosis or gastro-enterostomy, will finally prove to be the generally accepted procedure it is impossible to say. The statistical results, up to the end of 1902, were as follows: Pyloroplasty had been performed three times, successfully; in a fourth case, recorded by Sonnenburg, a pyloroplasty was performed, and as the relief was imperfect, a gastro-enterostomy was subsequently performed with good results. This patient was six years old, and the case is therefore hardly in the same category as those occurring in infancy.

Gastro-enterostomy, always anterior, had been performed 9 times; 5 patients recovered, 4 died. In one of these death was due to acute obstruction caused by a Murphy button which had been used to effect the anastomosis.

Loreta's operation had been performed 9 times with 7 recoveries.

TIMELY OPERATION IN PRIMARY APPENDICITIS,

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THE question I wish to emphasize is that every primary case of appendicitis should be operated upon timely—that is, before the disease has extended beyond the appendix, or complications have arisen.

Of the appendix, I will speak in a general way. It is covered with peritoneum, except upon its mesenteric part, and may be from a half inch to 12 inches long, but is usually 3 or 4 inches long. It may lie downward, inward, outward, or upward; but there may be cases where the appendix has no peritoneal covering, being turned under the cecum, lying between the bowel and the posterior wall, as in a case I operated upon a few days ago.

The appendix enters the cecum at the bottom of the posterior longitudinal muscular band of the ascending colon, and just below the ileocecal union. It is usually composed of four coats—serous, muscular, submucous, and mucous—the two inner coats containing numerous lymphoid cells, in delicate retiform connective tissue, sometimes developed as in the Peyer's patches in the ileum; also solitary glands, and glands of Lieberkühn. It will thus be seen the similarity of tissues in the appendix and the ileum, where we have the agminated glands, composed of lymphoid tissue, situated in the bowel wall opposite the mesenteric attachment, and are larger and more abundant near the lower part of the ileum. The lymphoid tissue is better developed in young persons, in both the ileum and the appendix, hence typhoid fever and appendicitis are relatively less frequent in old age. It is a clinical fact that appendicitis may result from typhoid infection of the Peyer's glands, and that we may have in each disease, ulceration, necrosis, or gangrene, with perforation. There is such an intimate lymphatic supply, that it is possible the infection in typhoid fever may be directly conveyed to the appendix through these channels, or it may be conveyed through the ileocecal opening into the cecum and then enter the appendix. The appendix becomes relatively more frequently ulcerated and gangrenous and perforated than does the ileum in typhoid fever, because of relatively less abundant blood and nerve supply, and an imperfect capacity for drainage, which may be increased by the hypertrophy of the lymphoid tissue. Each of the pathogenic germs causing appendicitis may be modified in its virulence by the environments, the same germ at one time causing a mild form of the disease, and again a fatal form. The germs found in appendicitis are the streptococcus, the colon bacillus, the staphylococcus and the lanceolatus, but these germs may be in the appendix and cause no pathologic condition, and only do so when some contributing cause impairs the normal resistance of the tissues, the germs then becoming pathogenic and destructive.

The diameter of the cavity of the appendix is usually smaller near the cecal attachment, which may be partially caused by the valve, formed by folds of the mucous and lymphoid tissues. So long as the drainage of the appendix is not obstructed, there will probably be no inflammation, or only a mild catarrhal variety; but when drainage is partially or wholly obstructed, destructive processes may follow, demanding immediate attention, the germ often becoming so virulent as to require the removal of the appendix before the end of thirty-six hours,

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to prevent ulceration, necrosis and gangrene, which may cause death with or without an operation. It is impossible to tell the degree of stricture of the appendix, or when conditions exist to make the operation dangerous or necessarily fatal, but we know that in these cases a timely operation may save the patient's life. It is true that we cannot always positively diagnosticate appendicitis, but if the appendix is not diseased, an experienced surgeon will, with few exceptions, find a condition that requires surgical treatment, such as hernia caused by fibrous bands and adhesions, in omental rupture, in the opening of an adherent Meckel's diverticulum; or volvulus, intussusception, malignant or tuberculous disease of the ileocecal junction, obstructed ureter, suppuration of the kidney or its pelvis, enlarged gall-bladder, impacted gall-stones in the ileocecal region, pyosalpinx, pelvic abscess, etc., and if perchance absolute error in diagnosis of any diseased condition does occur, the patient will recover, and if the appendix is removed, will be rid of a structure that may become an offending remnant. I therefore believe that every case of primary appendicitis should be operated upon if seen timely, and there are no positive contra-indications showing great danger in performing any capital operation on the patient, presupposing that the operator is an experienced abdominal surgeon. If this principle is observed, there should be practically no mortality, as is shown by the surgeons here and abroad who have done the most of this work—the mortality being in neglected cases, where the danger to vital parts was so great that death was inevitable by any method of treatment. It is true that many cases will apparently recover, but the disease will often recur because the appendix has become strictured or diaphragmed, so as to interfere with or obstruct drainage. This has been positively proven by examining appendices that have been dilated with and preserved in alcohol.

The condition is in a degree similar to a strictured urethra, and we know the results in such cases when neglected or improperly treated. It may be contended that it is best to operate between the attacks, the mortality then being lower. I do not believe this to be true where we operate timely during the first attack, and I would ask how are we to know that any patient will recover from an attack so as to be operated upon in the interval? The profession will be forced by results to recognize that appendicitis is not cured by medical treatment, and that surgery is the only rational treatment. In the acute stage, purgation is contra-indicated, but the contents of the stomach should be removed by the pump and no food or liquid given. If possible, avoid opiates. The lower bowel may be unloaded by an enema. There have been many disastrous results caused by purgation and food, and there is no disease in which excessive peristalsis is more harmful; but an opiate so modifies the symptoms as to prevent our getting a correct idea of the actual condition. Although it may occasionally be indicated, it is not directly curative, and should, if possible, be avoided. While most of my cases of appendicitis operated on with gangrene, necrosis, perforation, or suppuration recover, the recovery is protracted and adhesions are left, but my cases, operated upon timely, before these conditions appear, usually recover without complications. While the prognosis is less encouraging in operations between the attacks, it is better to operate at this time than during a recurrent attack, for we cannot anticipate conditions that may have developed to complicate the operation. As nearly all cases of appendicitis are first seen by the general practitioner, many lives may be saved by prompt consultation with one who is practically familiar with the correct technic for the removal of the appendix or any complication that may have arisen. It can no longer be claimed that the amelioration of symptoms in acute appendicitis usually contra-indicates surgical interference, for dangerous pathologic changes may progress rapidly under apparently favorable conditions, which cannot be positively known until the abdomen is opened. The pulse and temperature may often give no evidence of impending danger until complications have developed beyond the control of the physician and surgeon. The physician may say that a patient had appendicitis and entirely recovered without operation. How do we know that he had appendicitis, or that he got well? It was shown by Dr. Abbé in the pathological exhibit at Saratoga, in June, 1902, that every appendix in which the inflammation involves its deeper structure will have one or more strictures. The case may have been one of so-called catarrhal appendicitis. Whenever it involves the mucosa deeply, you will finally have a stricture. We do not know how great the constriction is or when it may become greater, with obstruction to drainage and recurrence of the disease. We know of patients having appendicitis ten to twenty years after the first diagnosis. I do not speak of those cases incorrectly diagnosed appendicitis. We must first make the diagnosis, and when we are agreed that it is appendicitis, the case should be operated upon before further involvement, because we then make a permanent cure, and there need be no complications, if the surgeon understands the correct technic in these operations. In the near future, it will be the universal opinion that every case diagnosed before the appendix is too greatly injured should be promptly operated on. Five years ago there were more surgeons opposed to the primary operation than there are physicians opposed to it to-day. There is no surgeon to-day who opposes it, and many physicians who were earnest in their opposition five years ago, are now positively in favor of the operation. Osler, Tyson, Anders, and nearly all authorities in medicine and clinical medicine, class the disease as surgical. How are we to treat appendicitis, if not surgically? I do not know how. Empty the stomach and give no liquids or food; no purgation, but an enema. Hot or cold applications may do no harm, and do no good. We may be compelled in some cases to give opiates if we do not operate. But

if you are an experienced physician or surgeon, and consider these cases carefully, you will seldom make a mistake in saying that appendicitis should be operated upon timely. My serious results have arisen from delay, or in serious cases similating appendicitis. A few days ago I was telephoned by a doctor at 9 o'clock A.M., saying, "I have another case of appendicitis." It began suddenly, no previous attack, in a boy ten years old. He was ordered sent to the hospital. The father was not at home, but he called me by telephone at 7 o'clock P.M., and said he would send the boy next morning. He reached the hospital about 9 o'clock the next day in a state of collapse. He had no radial pulse, and there was but little hope of positive relief, but I gave him the one chance. The abdomen was full of bloody serum, and 10 feet of the ileum gangrenous. The appendix was normal. Meckel's diverticulum as large as my finger, and about as long, was attached at the distal end to the mesentery near the ileocecal junction, and through the opening thus formed the ileum and mesentery had passed and become strangulated. I did not believe this was appendicitis, and so expressed myself before seeing the patient, the doctor having given the symptoms by telephone.

I was recently called by another doctor in a case, and carefully examined the man. He had a pulse of 75, temperature normal; was vomiting liquid as clear as water. I said that he would be vomiting fecal matter in less than twenty-four hours. This was at 4 o'clock P.M., and at 1:30 A.M. he was vomiting fecal matter. He was sent to the hospital and an extensive intussusception was found in the ileocecal junction. The man recovered. Twenty-four hours later he might have been dead. So I say that even if we cannot always diagnose appendicitis, we can find some condition that demands the attention of the surgeon.

But you may ask the pertinent question, "What shall we do when the case has gone beyond the primary and timely stage?" This is a serious question, about which there is no consensus of opinion. I believe in many of these cases we get better results by waiting until the abscess is walled off so we can open it and drain. I saw a case operated on the other day by one of our young surgeons. The appendix had sloughed off, and was gangrenous in its entirety. Adhesions were not sufficiently formed to prevent leakage into the peritoneum. The patient died within three days. Had she not been operated on until later, she might have recovered. What caused the gangrene in this patient? She had appendicitis for four or five days before I saw her, and the doctor had given her large quantities of purgatives, including a dose of croton oil. So evidently intense peristalsis encouraged the sloughing of the appendix. If a pus cavity is well protected by a surrounding wall, we may operate; if not, delay may show better judgment, and afterward when the acute symptoms have subsided, operate and do not let our patient go to another attack.

In many cases of inflammatory or purulent condition in the pelvis, I have found inflammation of the appendix, but usually no necrosis, gangrene, perforation, or pus formation, the appendix being adherent, often constricted and tortuous, caused by adhesive bands, with so-called catarrhal involvement.

In most of these cases the appendix was long, and the end was lying in the pelvic cavity, and while the separation of the adhesions may have cured the patient, I have felt it wise to remove the appendix, as its removal adds but little to the danger of the operation, and does away with condition that may finally cause serious trouble. From my experience and from the literature on the subject, I believe that in cases of pelvic abscess with suppurative appendicitis, the latter disease usually causes the former, for there are cases where in suppurative appendicitis, the pus goes into the pelvis, and may be removed by vaginal incision. I have recently operated upon 8 cases, for single or double tubo-ovarian abscess, or single or double pyosalpinx with appendicial involvement, the disease of the appendix having been communicated from the pelvic structures, but caused neither necrosis, perforation, gangrene nor pus.

Then while appendicitis is not often a direct cause of pyosalpinx or ovarian abscess, these conditions may result from contiguous relation, with pus formation in the pelvic peritoneum, following appendical abscess. But an appendical abscess may involve the pelvis and cause no abscess of ovary or tube, as the following case illustrates:

I was called in consultation to see Mrs. B., with an acute attack of appendicitis. She had all the symptoms of appendicitis, was in collapse, with a feeble pulse of 140, temperature 104° F. She had the cold, clammy perspiration we have in collapse from sepsis. Feeling that an operation at this time was contra-indicated, we gave her a hypodermic of morphine one-fourth grain, and strychnine, one-twentieth grain. She was much improved in a few hours, was removed to the hospital, and within twenty-four hours her pulse and temperature were nearly normal, and remained so for four days, during which time she suffered but little pain. On the fifth day she felt intense pain and pressure in the pelvis, interfering greatly with the rectum and bladder. Her temperature was now 104° F., and pulse 120, but of good volume. The pelvis was filled with pus, and through an incision in the posterior vaginal fornix there was discharged a quart of pus of intense fecal odor, containing a concretion three-eighths of an inch in diameter. Her pulse and temperature were normal next day, and she made a prompt recovery, and from careful examinations I am certain there had been no abscess in the tubes or ovaries, and she has had no symptoms of pelvic trouble since. I consider it our duty in every operation for disease of the right pelvis, to carefully examine the appendix, and it is also best to do so in abdominal sections for any pathological condition.

ON THE HYPODERMATIC USE OF ADRENALIN CHLORIDE IN THE TREATMENT OF ASTHMATIC ATTACKS.*

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AND
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(*A Preliminary Communication.*)

THERE are among the patients at Montefiore Home many cases of asthma that differ in their mode of onset, and in the variety and frequency of their seizures. These patients have afforded the material for the observations in this paper.

Before the use of adrenalin chloride hypodermatically the attacks were treated by the following methods. Fumes were inhaled from the various powders the bases of which are stramonium, belladonna or hyoscyamus with potassium nitrate. Opium and morphine were given by mouth, rectum and hypodermatically. In some cases relief was afforded in one-half to one hour, but only when doses large enough to produce stupor were administered. Frequently when the narcotic effect wore off the attack would return. Chloral and the bromides were given, but their action was not prompt and not always satisfactory. Nitroglycerin and hyoscine were administered. Camphor and ether were given hypodermatically. A combination consisting of antipyrin, antifebrin and caffeine was used. Chloroform anesthesia was resorted to in some obstinate cases in order to produce general relaxation; often the attacks would return with the wearing off of the anesthetic. Inhalations of oxygen were tried. Emetics were exhibited, cupping and mustard footbaths were resorted to. Silver nitrate injections into the vagus region were used. Adrenalin chloride was given by mouth but it had no effect on the attack. Adrenalin chloride was sprayed into the pharynx without satisfactory results. In fact, almost all the text-book methods were exhausted without much benefit to the patient.

As may be seen, the methods enumerated did not readily break up the attacks of asthma. They ought to be cut short as quickly as possible when one considers the sequelæ of a succession of asthmatic seizures. Although in some cases the patient's distress alone may cause anxiety to the physician it is what follows repeated prolonged attacks which gives him concern. Asthma itself has no known pathology; the repeated recurrences of asthmatic attacks, however, lead to the well-known changes characteristic of emphysema. Though there is no accepted pathology of asthma, during the asthmatic attack the pneumatic conditions in the lungs are presumably the following: There is an obstruction to the escape of air from the air vesicles and the air vesicles are overdistended. As a result of the obstruction the walls of the air vesicles are forced to expend their elastisity upon an air-cushion, so that, finally, they are overstretched, thus losing part of their elasticity. With the frequent recurrence of the above conditions the walls of a great many of the air vesicles lose their power to contract and remain distended. The passive hyperemia depending upon the vasoparesis results in an impairment of the vitality of the lung tissue and the walls of the vesicles atrophy. The many distended vesicles with their non-elastic walls enlarge the lungs to such an extent that they cause an increased intrathoracic pressure, producing an enlargement of the thorax and the characteristic barrel-shaped chest. In view of these consequences of the asthmatic seizure, and the obstructive explanation of the attack, the therapeutic attempt is properly directed toward relieving the obstruction and allowing the free egress and ingress of air. In order to remove the obstruction it is necessary to consider its nature first. It was such a consideration which led logically to the hypodermatic use of adrenalin chloride in asthma.

There are two chief theories accounting for the obstruction in an asthmatic attack. First, that the bronchial obstruction is brought about by a spasm of the circular muscles of the bronchi; second, that the obstruction is caused by a turgidity of the bronchial mucosa. The former theory is upheld by the majority of the medical profession, and is the one recently supported by the experimental studies of Brodie and Dixon,* in England. The data for the latter, or angioneurotic theory, have been presented by Goodhart in the chapter on Hay-fever and Asthma in Allbutt's "Practice of Medicine." The recent experimental studies on hay-fever by Dunbar† also seem to be in conformity with this second theory, as well as the article by Norman Bridge on Asthma, Bronchitis and Whooping-cough, in Hare's "System of Practical Therapeutics." The repeated failures of antispasmodics, to cut short the asthmatic attack, suggested the employment of adrenalin chloride hypodermatically, as a general vasoconstrictor, in conformity with the second hypothesis. The satisfactory result in one instance led to the repetition of the procedure and to the making of the following clinical observations:

Case I.—Female, aged seventeen years; Russian, admitted, 1900. Family history.—Mother has heart disease and hemoptyses. Father T. B. Personal history.—Until present illness personal history is negative. In 1898 patient caught cold while bathing. Two weeks later she had a typical asthmatic seizure lasting two days and three nights. One month later she had another attack lasting three days. Another spell, which was observed at the New York Hospital, lasted three days. Since then attacks of asthma recurred at intervals of from one day to two months. These attacks are usually preceded by malaise, pallor of the face and a few wheezing râles upon deep inspiration. Then the dyspnea becomes more and more marked, the mucous membranes become congested, the face and extremities cyanotic and cold, the wheezing and noisy breathing is heard at some distance from the bed, and the patient's

* From the Montefiore Home for Chronic Invalids, New York City, presented for publication, Sept. 22, 1903.

* The American Journal of the Medical Sciences, Sept. 19, 1903, "The Pathology of Asthma."

† Deutsche medicinische Wochenschrift, No. 9, Feb. 26, 1903.

distress is evident. These attacks return at irregular intervals and are apparently influenced by various conditions, such as atmospheric changes, dust, smoke, physical or mental exertion, menstruation, constipation, and, at times, without any evident cause. No constant pathological change in any of the organs has been found which would account for the origin of the attack. Some of these seizures were so severe as to leave the patient almost exhausted. Respiration would go up to 50 per minute and the pulse to 160.

These attacks were treated in various ways. Three years ago suprarenal extract in 5-grain doses was given by mouth and soon abandoned. The bromides, morphine, and digitalis, and at times atropine were used. On a few occasions the attacks were so severe that chloroform anesthesia was resorted to in order to relax the spasm. Adrenalin sprays into the pharynx were employed but they did not relieve the attack. Finally, after the patient's weight was reduced twenty pounds in two months, by a succession of attacks, the hypodermatic use of adrenalin chloride was suggested in agreement with the angioneurotic theory.

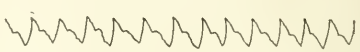
After the patient had been suffering for twenty-four hours and the attack was still in full force, the first dose of 7½ minims of an old solution of adrenalin chloride was administered. Half an hour later the patient was enjoying a quiet sleep. The attacks have taken place as frequently as before, but owing to the promptness with which they are cut short the patient has regained 8 pounds in the first month and 12 pounds in the second. During an attack the blood condition is as follows: Hemoglobin, 80 per cent.; red blood corpuscles, 4,800,000; white blood corpuscles, 8,000; differential count of white blood corpuscles gave polynuclear neutrophiles, 38 per cent.; transitionals, 8 per cent.; small lymphocytes, 6 per cent.; large lymphocytes, 8 per cent.; mononuclear leucocytes, 10 per cent.; eosinophiles, 26 per cent.; basophiles, 4 per cent.

While treating the patient by this method, the following observations were made: On one occasion after being awakened suddenly during the night by the advent of an attack and having suffered for several hours intensely, the patient was again seen at 7.10 A.M. after several antispasmodics had been given and 10 minims of adrenalin chloride had been administered by mouth without effect. At this time the patient was found sitting up in bed with her face cyanotic and her extremities cold. The breathing was loud and typically asthmatic, with the chest muscles overacting in a futile effort to aerate the lungs. At 7.11 respiration was 42 per minute, pulse 126. At 7.15 four minims of adrenalin chloride were injected into the arm. At 7.18, or three minutes after the injection, the patient's dyspnea was suddenly and completely relieved and the chest ceased to labor. At this time her face was pale and she could converse with comfort. Her respiration was 48 and her pulse 132; at 7.26, respiration 36, pulse 120; at 7.33, respiration 32, pulse 96 and the patient was quietly dozing.

An attack was recently observed (Sept. 6, 1903). Patient having visited her relatives during bad weather, came back suffering from malaise. Next morning, after several hours of increasing dyspnea, the patient was suffering considerable discomfort, her respiration being 40, pulse 128, of poor tension. At 12.38 P.M., one minute after the above observation, four minims of adrenalin chloride were injected into the arm. At 12.41 P.M. her respiration was 37, pulse 144, of good tension. At 12.46 all the subjective symptoms as well as the râles were gone. Breathing was comfortable—38 per minute—pulse 114. At 12.50 P.M. respiration 35, pulse 110. This patient's pulse normally ranges between 90 and 100.

On some occasions we had the opportunity to study the effects of the drug upon the pulse, as the following sphygmographic tracings indicate. In order to eliminate the psychical element the following experiments were performed:

Fig. 1.

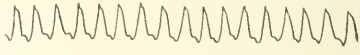


Usual tracing between attacks. Dudgeon's Sphygmograph.

Fig. 2.

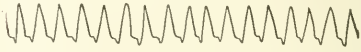
During an attack before adrenalin chloride was injected.

Fig. 3.



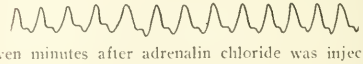
During an attack one minute after adrenalin chloride was injected.

Fig. 4.



Four minutes after adrenalin chloride was injected.

Fig. 5.



Seven minutes after adrenalin chloride was injected.

Tracings 2, 3, 4 and 5 were taken without changing the adjustment of the instrument, so that their distance from the horizontal lines approximately indicate the relative blood-pressure.

During an attack the respiration at 10.30 A.M. was 40, pulse 125. Breathing labored and wheez-

ing. Ten minims of water withdrawn from an adrenalin bottle were at once injected.

At 10.38 her respiration was 40, pulse 128; breathing unchanged. At 10.40 A.M. 3 minims of adrenalin chloride were injected into the arm. At 10.43 her respiration was 27, pulse 125, breathing practically normal. No râles. Recently (Sept. 9, 1903) the same experiment was repeated with the same results.

Case II.—Male, aged sixty-three years; tailor; Hungarian; admitted 1900. The salient features in this history are the following: He is an excessive smoker and moderately alcoholic. For thirteen years he has had severe attacks of bronchial asthma, which usually lasted for several days and nights. He suffers from emphysema and his customary dyspnea varies in intensity from time to time. The asthmatic seizures are typical, though sometimes they are associated with hiccough; sometimes they alternate with attacks of hiccoughing.

During a severe attack, the patient was seen at 12.19 A.M., his respirations were 22, pulse 108. His breathing was wheezing and could be heard all over the ward. Three minims of a fresh adrenalin chloride solution were immediately injected into the arm. At 12.22 there was no improvement, so that another two minims were administered. At 12.25 his respiration was 30 and his pulse 84, with increased tension. The breathing became quiet and a few râles could be heard, only when the ear was closely applied to chest. The patient was comfortable. Ten minutes later the patient shivered, as if in a chill, for about two minutes—and felt cold for a few minutes longer. One hour later the patient was resting quietly, the hiccough being relieved as well as the other symptoms. Following this attack the blood condition was: Hemoglobin, 70 per cent.; red blood corpuscles, 4,200,000; white blood corpuscles, 8,000. Differential count showed polynuclear nuetrophiles, 54 per cent.; small lymphocytes, 3 per cent.; large lymphocytes, 17 per cent.; mononuclear leucocytes, 3 per cent.; transitionals, 6 per cent.; basophiles, 2 per cent.; eosinophiles, 15 per cent.

Case III.—Female, aged thirty-seven years; housewife; Russian. She had grip in 1889, coughing very much and was very weak. Since then she has had moderately severe attacks of asthmatic dyspnea, which lasted for a week or ten days. After an injection of 5 minims of adrenalin chloride the condition is promptly relieved in about three minutes, and she feels better for several days. Following one such injection when the blood pressure had been increased by excitement and a fresher solution had been used, she experienced pain in the heart and a sensation of coldness. She shivered, her extremities were cold, cyanosed and tremulous and the visible mucous membranes were pale. These symptoms were considerably relieved by one-half ounce of whisky.

Case IV.—Female, aged sixteen years; seamstress. In May, 1902, she caught cold, vomited and had dyspnea. Inhaling some "smoke" relieved her a little. Worked for one week and got another attack, compelling her to stay in bed. She came to this institution after a stay for some weeks in Gouverneur and Mt. Sinai hospitals. The attacks usually come on at night, causing considerable distress to patient. August 23, 1903, patient had an attack at night, 7½ minims of adrenalin chloride were injected and the seizure was cut short in two minutes. The patient said that later in the night she had a slight recurrence.

Case V.—Male, aged sixty years; peddler; moderate drinker; heavy smoker. Fourteen years ago had a cough for five months. Now he has all the physical signs of an emphysema and frequently gets typical asthmatic attacks at night. During one of these attacks, at 10.30 P.M. respiration was 35, pulse 102. Wheezing and sonorous râles all over the chest. Five minutes after the injection of 6 minims of adrenalin chloride, the respiration dropped to 30, and the pulse to 100; all râles disappeared and the patient slept quietly.

A number of other cases were treated with adrenalin chloride hypodermatically with precisely the same results.

It has been noticed that during an attack of asthma the pulse tension is diminished. This fact furnishes an additional indication for the hypodermatic use of adrenalin chloride, which has an accepted vasoconstrictor effect. Excessive vasoconstriction, however, is followed by a short rigor or chill without pyrexia, a sensation of pain and palpitation of the heart, a feeling of light headedness or headache as well as coldness and general shivering with a feeling of tingling and numbness of the extremities. A general blanching of the skin and visible mucous membranes is observed, together with tremors of the extremities * These sensations never lasted longer than ten minutes and have never been noticed to any marked degree when the drug has been administered in the proper dose. This effect has been noticed in persons with stiff arteries from a smaller dose, and more often than in other patients. It is conceivable that patients with brittle arteries might be injured by an overdose; in such cases the drug must be given cautiously and the dose must be divided. There were no harmful effects observed in any of the patients, though some of them had marked arteriosclerosis.

In conformity with the angioparetic theory of the asthmatic attack, a dose sufficient to cause general vasoconstriction is necessary to cut short the seizure. Doses too small to bring about this result did not relieve the patient. Doses which are large enough to cause too marked constriction of the capillaries, such as will be followed by muscular fatigue and consequent loss of vascular tone, are sure, though the attack may be stopped temporarily, to be followed by a return of the symptoms, when the vasodilation manifests the muscular fatigue. No matter how large the dose, time sufficient for it to traverse the lesser circulation must elapse before the drug can act.

* In four patients who presented these symptoms, urinalysis showed no glycosuria.

With fresh preparations of the drug 3 to 6 minims of the 1 in 1,000 solution, hypodermatically, cut short the asthmatic attack, usually without disagreeable sequelæ. It is worth while mentioning the fact that solutions of adrenalin chloride deteriorate from exposure to light and air, and that the dose must be increased accordingly.

The immediate vasoconstriction necessary to cut short an attack can only be obtained by the hypodermatic method of administration. Much larger doses by mouth do not cause the above effect; sprays into the throat are likewise inefficient. Adrenalin chloride used externally has only a local constricting on the capillaries, for which reason it is poorly absorbed when applied to the mucous membranes, therefore, in order to produce a constricting effect on the capillaries in the lung it must be introduced into the circulation. These facts are in accordance with Simonowitch's observations on the "Action of Adrenalin" in *Roussky Vratch*, June 14, 1903, who mentions among other things, the slow absorption of the drug by mucous membranes.

The hypodermatic administration of adrenalin chloride is not painful. In some cases there is a blanching of the tissues about the puncture with a reddened areola. This can be obviated by a deeper injection.

From these observations the following preliminary conclusions suggest themselves: (1) Given hypodermatically, adrenalin chloride is capable of cutting short attacks of asthma in from two to twenty minutes. (2) In conformity with the angioparetic theory of an attack, the dose must be such as will cause prompt general vasoconstriction, three to six minims of the 1 in 1,000 solution, in a single or divided dose, being used in adults.

In closing, the authors wish to express their sincere thanks to the House Physician, Dr. Siegfried Wachsmann, for his generosity, encouragement and advice during the progress of their work.

MEDICAL PROGRESS.

SURGERY.

Improvement in the Method of Local Anesthesia.—In a clinical lecture, A. E. J. BARKER (Lancet, July 25, 1903) advises preparing solutions for local anesthesia as follows: 3 grains of beta-eucaine and 12 grains of sodium chloride are dissolved in 3½ ounces of boiling distilled water and then 15 drops of 1 in 1,000 adrenalin chloride solution are added when the fluid is cool. Two and one-half drams will generally suffice and a radical operation for inguinal hernia can well be done with this amount if the injection is made all around the neck of the sac and into the superficial structures. It is necessary to wait twenty minutes after the last injection for the full effect of the adrenalin to develop. Due regard must be had to the position and course of nerves supplying the structures to be dealt with.

Cholecystenterostomy Combined with Enteroanastomosis. D. MARAGLIANO (Centralbl. f. Chirurgie, Aug. 29, 1903) finds a decided advantage in uniting the ascending and descending limbs of the loop, where an anastomosis of the intestines with the gall-bladder is done. The amount of intestinal contents which passes the opening in the gall-bladder is thereby reduced to a minimum and the pressure of the gut upon the biliary passage is also diminished, thus preventing a stasis of bile. The only disadvantage is that the operation is somewhat prolonged.

Treatment of "Toy Pistol" Wounds.—The supposedly innocent celebration of our independence has, during recent years, cost the lives of so many of our enthusiastic young Americans that the treatment of these small but dangerous wounds becomes a very important matter. W. S. SCHLEY (N. Y. Med. Jour., Aug. 29, 1903) describes the methods which have been found at St. Luke's Hospital to give the best results. The wounds are usually of the hand and are nearly always produced by the discharge of the blank cartridge pistol of small caliber in the effort to cock the arm while held with both hands. An important point frequently overlooked is the surprising extent of damage done beneath the surface, often when the exterior, except for its small blackened hole, shows so little indication of the condition beneath. In a number of cases with the wound near the metacarpophalangeal joints, the effect of the powder blast, the powder grains, and a few times the wad itself, were found under the palmar fascia, almost as high as the annular ligament. In others, powder grains and wads have been found near the dorsum of the hand and well above the injury in the palm. The force of the discharge appears to follow along the lines of least resistance and spread extensively in the connective tissue planes if the muzzle of the pistol is not more than an inch from the skin. The best results have been obtained with a free longitudinal skin incision and with good retraction continue the cut till the limits of all blackened tissue and powder grains have been reached. This requires better observation and more careful dissection than at first sight appears necessary. A small blackened spot not infrequently will lead to a large blackened area in another and unexpected direction, which also contains blackened sloughy tissue and powder grains. Sloughy areas and extraneous matters are curetted gently away with free irrigation of the wound with boric acid or 1 in 5,000 bichloride. A comparatively loose, moist, iodoform-gauze packing with a large wet dressing of 1 in 5,000 bichloride is then employed and kept wet at home. Through and through drainage is used when the hand has been nearly perforated. In regard to the wads, two is the rule and one of them may be tucked away in some recess made by the blast. General anesthesia is usually more satisfactory, unless the patient presents himself soon after the accident. No cases of tetanus have developed after this method of treatment and only a few cases have developed a cellulitis which necessitated further incision.

New Method for Reaching the Subdiaphragmatic Space.—Most surgical procedures for freely exposing the space between the liver and diaphragm are complicated and dangerous and a number of them have not yet been tried successfully on the living subject. The following comparatively simple method has been devised by G. MARWEDEL (Centralbl. f. Chirurgie, Aug. 29, 1903) and employed with good results in one case. A curved incision is carried from the ensiform process to the tenth rib, two fingers' breadth away from and parallel to the costal border. By dissecting the upper flap of the wound the costal margin will come to view. The seventh rib is then divided close to its sternal end and the rectus and external oblique are dissected free from the seventh, eighth and ninth ribs. By dividing the three cartilages near their junction with the bone and then raising the flap of bone and soft parts, free access to the hypochondriac region is obtained. If

necessary, the ribs themselves may be divided and more ribs may be included in the flap but care must be taken not to wound the pleura above the seventh. On the right side a large portion of the anterior surface of the liver comes to view and the space may be enlarged by dividing the suspensory ligament. On the left side, the upper portion of the stomach and the cardia can be easily reached. The ribs reunite firmly after the operation and no discomforts remain behind.

Tuberculosis of the Kidney and Ureter.—Two different forms of this disease must be considered in these organs, viz.: Miliary or acute and the caseous or chronic. According to J. Wesley Bovée (Am. Gyn., Aug., 1903), the diagnosis of tuberculosis of the kidney and ureter is to be determined when possible by a careful scrutiny as follows: (1) A careful study of the case history; (2) physical examination of the kidney and ureter; (3) careful urinalysis; (4) tuberculin test; (5) inoculation of animals. Albarran found that of the 203 patients operated upon for renal tuberculosis but 55 were men. The symptoms vary with the progress of the disease, the character of complications and the route of invasion. Acute miliary tuberculosis of the kidney is often found post mortem in children who have died of acute general miliary tuberculosis and, perhaps, with no symptoms of renal involvement, unless it be polyuria. Pain is one of the most constant symptoms of the disease. If the type of involvement be descending, then the pain is localized in the loin at first. It is persistent at that time, but not severe and may not be attributed to this disease. The duration of suffering from the pain may vary from a few months to many years. If the process is ascending then severe pain from the early stages is present and gradually extends to the loin. At times the pain is colicky in character, as a result of temporary obstruction to the flow of urine along the ureter. At such times vomiting is not uncommon. Frequent or painful micturition or both are common symptoms. One of the author's patients would empty her bladder as many as 200 times a day. A slight fever may be present from the onset, particularly with the ascending type. Chills are not at all uncommon and night sweats are to be expected in several cases. Emaciation also present. The enlargement of the kidney, is usually, but not always, due to the presence of pus collections in the organ. It may be regular or nodular in its outlines. The examination of the urine for the presence of the tubercle bacillus is most important. The Torssells method for finding the bacillus is advocated. The failure to get satisfactory results with the tuberculin test affords very good evidence that the individual is free from tuberculosis. In the advanced stages of the disease we may expect to find marked emaciation; fever, chills, night sweats, severe localized constant pain, frequent and painful micturition day and night; perhaps the presence of evidence of tuberculosis in other structures; a mass of considerable size in the loin, with a hard, smooth or nodular ureter; urine loaded with pus or blood, or both, but not having the foul ammoniacal odor so suggestive of cystitis. The prognosis, in short, depends in the first place to a great extent as to whether climatic treatment is available in early cases—though even here nephroureterectomy would be preferable, and, secondly, whether in the latter stages the procedure is justified and performed when the disease is limited to one kidney and ureter. Under all other conditions cure cannot be expected but amelioration may follow operation.

Suburethral Abscess.—This condition usually manifests itself as a well-defined, roundish or oblong swelling of the anterior vaginal wall just under the urethra, and may be located anywhere along its floor—from half an inch above the meatus, almost up to the neck of the bladder. Its capacity may vary from a few drops to two ounces of pus. Usually, says C. Jeff. Miller (Am. Gyn., Aug., 1903), its orifice is to be found at about the middle third of the urethra. If the sac is situated in the middle or lower third of the vaginal septum, it usually bulges in the vaginal outlet and can be seen without opening the labia, while those situated higher up, near the proximal end of the urethra, may be overlooked, unless they are of considerable size and tense on pressure, and the case treated as one of cystitis, or merely as an "irritable bladder." If the cyst is not draining well, a smooth, cushion-like sensation is imparted to the touch on vaginal palpation. The cause of this affection is not always clear. Kelly states that the gynecologist usually sees such cases only after they have become long standing. Some cases are attributed to peri-urethral inflammation, which sometimes suppurates and ulcerates into the urethra; while no doubt chronic, circumscribed urethritis or the glandular urethritis of gonorrhœal origin, is responsible for others. Diverticula from the urethral wall, retention cysts, blood cysts following injuries, as in confinement, cause a type which is frequently easily differentiated from abscesses following periurethral suppuration. The symptoms are usually painful urination and a sense of heat and aching distress in the urethra. Sometimes pus is discharged suddenly, at other times it oozes constantly from the urethra, and may be mixed with the urine. By making pressure downward along the urethra the sac can usually be emptied most readily. The urethral speculum is even more valuable as a diagnostic aid than in treatment. Urethrocele, a sacculation of the middle third of the urethra can easily be confounded with these abscesses. Experience has taught the author that surgical treatment should be promptly instituted, though one is prone to adopt general cleansing methods, daily emptying of the sac and the introduction of antiseptics; but at best such treatment requires a long time. On the other hand, a complete fistula is no more annoying to the patient, and is usually much easier to relieve if the proper after-treatment is observed. In cases in which the urethra can be thoroughly dilated and the abscess opening enlarged so that the pus can readily escape spontaneously, cure frequently occurs, but, when the condition is the result of peri-urethral inflammation, this is not always feasible. After incision of the sac, a retention catheter should be worn, or the bladder emptied at regular intervals by a soft rubber catheter, in order to prevent contamination of the wound. Some prefer to exsect an elliptical portion of the sac or dissect out the entire sac and operate as in an ordinary fistula, but even the opening may fail to close, rendering subsequent plastic operations necessary. With thorough incision and cleanliness of the sac and vagina and employment of the catheter, most cases will close within eight to ten days.

Ureterocystostomy.—This is a term applied for an operation for implanting a ureter into the bladder. It is applicable, says J. W. Bovée (Am. Gyn., July, 1903) to such conditions as ureterovaginal fistulæ from various causes, principally operations on the female genital organs following complications, or following complicated parturition. Numerous other causes of fistulæ are recorded, such as tuberculosis of the lower portion of the ureter, erosions from ureteral calculi, accidental traumatisms, syphilis, etc. Resection of the ureter for various causes may often call for implantation of the ureter into the bladder. Slight injuries to the wall of the ureter should close spontaneously, particularly if slight support be made to the point of injury with gauze packing. Failure to secure this result would demand closure by suturing, provided the opening be small and involve but little of the circumference of the ureter.

The operation is not the one of preference for lesions between the pelvic brim and the lowest two inches of the ureter. Here no doubt can exist of the advantage of end-splicing in some form. The routes by which the bladder implantation of the ureter have been done are the extraperitoneal, the intraperitoneal the transperitoneal, sacral and the infrapubic. The Veit and Witzel trans- and extraperitoneal operations are by far, the most free from objections. There is combined the advantages of sufficient working space, and rapidity in finding to make the implantation. If possible, the drainage should be extraperitoneal. Permanent ureteral catheterization is inadvisable but constant; bladder irrigation should be continued from three to five days, after which catheterization every two or three hours for a week should be all that is necessary. The principal complication from this operation is infection. This is due to preexisting infection, which is quite common in chronic ureteral fistulæ. Sometimes a bladder fistula is present and renders great liability to infection. Plastic vaginal operations persisted in afterward lead to infection (urinary). If done in the course of abdominal operation, particularly if infectious, the danger is enhanced. Tuberculous or syphilitic lesion increase the tendency to failure. The re-employment of permanent suture material like silk no doubt leads to complication. Incrustations of lime salt form thereon whenever urine comes in contact with them. Bladder tenesmus occurs from their acting as a foreign body in their wall, even when encysted, and their well-known uneasiness in tissues finds no exception in the bladder wall. The subsequent histories of ureterocystostomies is not well known. It is probable the result is satisfactory, though Polk had ureteral dilatation from too much constriction in one case and Pozzi had a similar result from an opening too large at the junction. Of the 80 cases tabulated by the author, in 1900, 7 have died, a mortality rate of 8.75 per cent. Four of the cases were those where the grafting was done in the course of an abdominal operation and in one of these, for other conditions, death was attributed to an independent cause. The additional 31 cases have recovered, making the mortality rate for 111 cases 6 per cent. It cannot be considered a grave operation. When no complications exist and as it becomes better known, it is believed that the mortality rate will be almost nothing.

GENITO-URINARY AND SKIN DISEASES.

Suprapubic Operation for Varicocele.—A very satisfactory method of operating for the radical cure of varicocele is described by R. M. THORNBURGH (Med. Rec., Aug. 29, 1903): Most of his patients have been from recruits to the regular army and the rule has been followed that he should operate only upon those cases in which the varicocele was as large or larger than the sound testicle. The suprapubic route, which he employs, is claimed to be preferable because the site of operation can be more readily rendered sterile, a dressing once applied will remain in place indefinitely and primary union is practically certain. After the usual preparations the finger is introduced into the external ring and a nick made with a knife directly over the tip of the finger. With this nick as a guide an incision 3 cm. long is made parallel to Poupart's ligament. The deep fascia is cut through and then by blunt dissection the cord is brought into view and the vas carefully isolated. The testes can readily be brought into view by gentle traction on the cord and the veins are separated down to within an inch of the testicle. The vessels are also separated from the cord in an upward direction for 6 or 7 cm. The vessels are then tied with No. 3 cumolized catgut and the vessels between the ligatures (5 to 6 cm.), excised. The ends are approximated and the ligatures tied to each other, thus forming a support for the testis. At the end of ten or twelve days the dressing is removed and primary union may be expected.

Hereditary Tardy Syphilis.—The symptoms of hereditary syphilis are generally manifest at birth or appear within the first two or three months. They are the same as in the acquired disease of adults, but differ in their sequence and in the regularity of their appearance. In tardy hereditary syphilis, tertiary signs may make their appearance as late as the twentieth year. JORDAN (Münch. med. Woch., Aug. 4, 1903) divides these cases into two classes, viz., where syphilitic manifestations were present in earliest youth and had disappeared with proper treatment, and, secondly, where these late signs gave the first clue of infection. This class is not recognized by many syphilographers, but two undoubted cases are cited. It generally appears as a bilateral affection of the knees, either an arthralgia, a simple chronic hydrops, a syphilitic tumor albus or a deforming arthritis. It is often extremely difficult to make a diagnosis, but if no direct history is present and antiluëtic treatment should be resorted to in all symmetrical cases, which resist other measures, especially if there are marked fluctuations in the course. Often the presence of a parenchymatous keratitis will assist the diagnosis.

EYE, EAR, NOSE AND THROAT.

Cause and Specific Treatment of Hay Fever.—A preliminary report has been made upon the specific treatment of hay fever by the use of an antitoxine serum which is produced by injecting the pollen from rye and other plants into animals. This experimentation has been carried on in Germany by Prof. Dunbar and samples of the toxin and antitoxin have been used in this country during the past few weeks by E. MAYER (N. Y. Med. Jour., Aug. 8, 1903). It was found that one drop of the toxin placed in the eye of a person susceptible to the June hay fever resulted in a local inflammatory condition of the conjunctiva and all the other symptoms of hay fever, but that it had no effect when dropped into the eye of one non-susceptible. Furthermore, when the symptoms had developed as the result of the toxin they could be easily allayed by the use of a few drops of the antitoxin. Investigations have not yet been completed, but it would seem that it would undoubtedly be necessary to produce toxins and antitoxins from various kinds of pollen in order to successfully treat the numerous cases of hay fever which occur at different seasons of the year and under widely different conditions.

Primary Sarcoma of the Iris.—A personal experience with a case of primary sarcoma of the iris in which excision of the tumor was followed, after a lapse of years, by recurrence of the neoplasm at the site of operation has served to strengthen the conviction of H. COPPEZ and J. de VAUCLEROY (Jour. Méd. de Bruxelles, Aug. 13, 1903) that enucleation is imperative in all such cases, as the tumor is believed to remain rarely localized; prolongations being sent out from it and penetrating between the fibers of the ciliary muscles and insinuating themselves in the sheaths of the anterior ciliary vessels and spreading thence to the sclerotic coat. The tumor may also invade the canal of Schlemm and from there extend far beyond its original site, invading the entire cornea; and finally, metastatic foci may be seen in the apparently healthy tissue of the iris. The development of a sarcoma is slow, yet if it once reaches the sinuses, such as the suprachoroidal, where its progress is unimpeded, its development is very rapid, and it may then extend widely and quickly.

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PHILANTHROPY AND TUBERCULOSIS.

The power of a man who has triumphed over obstacles is irresistible. It was Robert Louis Stevenson's determined efforts to live and to enjoy the living that made his influence so stimulating, but an even greater enthusiasm is aroused in the minds of his brethren over the successful living and doing of Dr. E. L. Trudeau, whose paper on the "History of the Tuberculosis Work at Saranac Lake" is published in this issue of the Medical News.

It would be impossible for Dr. Trudeau to have sketched the history of this first great public Sanitarium for tuberculosis in America, without making it somewhat personal, for it was from himself as patient and physician that the whole idea grew, but so modest are his references to his own work, that it devolves upon us to say that no one in the country deserved more the honor of being invited to give this, the first of the series of six addresses, to be delivered at the Phipps Institute for the Prevention, Treatment and Study of Tuberculosis.

Bacteriology, therapeutics and philanthropy all housed together with the spirit of a brave but sick man, have turned a few hunters' cabins into a great Sanitarium resort. Through his patient, persistent efforts the needful money has come, and the principles involved in the treatment have become established. In short, the way has been paved for the intelligent and appreciative application of the magnificent gift of Mr. Phipps' millions.

The success of American citizens we feel is largely due to the generosity of wealthy men who have made general education possible through the founding of libraries and colleges.

During the last few years, however, an even greater gift than education has been given to the nation. The corner-stone of the foundation of National Health has been laid by the establishing of such institutes as the Rockefeller Institute for Preventive Medicine, the McCormick Institute for the Study of Infectious Diseases, and the Phipps Institute that, we hope, will in the course of time, drive tuberculosis out of the land.

If one man, self-trained, far from laboratories, with crude home-made appliances could in thirty years work out his own salvation, as well as the salvation of thousands of patients, and at the same time impress his ideas on a skeptical community, what cannot a trained corps of men with plenty of means do, in furthering the study and treatment and prevention of tuberculosis, under the direction of the Phipps Institute?

RECENT PROGRESS IN TYPHOID FEVER.

Annually, at this period, the typhoid fever curve rises highest in practically all of the large cities of the country. It is important, therefore, to recall helpful recent advances in our knowledge of the disease and especially of its diagnosis and treatment.

The more carefully the Widal test is made, the more clear does it become that many of the continued fevers of adult life, which used to masquerade under other names, are really typhoid fever with some anomalous symptoms. Two of the continued fevers that were popularly supposed to be frequent in the spring and fall particularly, so-called gastric and bilious fever, are now conceded by practically all careful physicians to be nothing more nor less than typhoid fever. As stated by Dr. Elsner, at the meeting of the Medical Society of the State of New York, last week (see Medical News for this week, p. 808) gastric symptoms may not infrequently occur at the beginning of typhoid fever and the initial rise of temperature may be followed by jaundice, which persists for some time, yet the Widal test will show that the primary etiological factor in the condition is the bacillus of typhoid fever. This

bacillus, as is now well-known, finds a favorite habitat in the biliary tract and may exist there for a considerable period before invading the intestinal tract proper, or even may be limited in its ravages to the mucosa of the gall-passages.

As time goes on, further confirmation is added to the opinion—now becoming universally prevalent—that typhoid fever is much commoner in children and even in young infants, than was formerly supposed. Continued fever in a child that cannot be shown to bear a definite relation to some pathological condition of the respiratory tract or to some acute gastro-intestinal condition, must be suspected of being typhoid and a series of Widal tests should be made. Not infrequently infants seem to suffer from a mild form of the disease and the skin eruption particularly is apt to be scantier and less characteristic than in adults. The number of rose spots, of course, in any particular patient, bears no relation to the severity of the disease and not infrequently fulminant typhoid fever with hemorrhages early in the affection, may occur where there have been only a very few spots, or where the cutaneous eruption is altogether absent.

With regard to the prophylaxis of typhoid fever, it is evident that much more exacting precautions are necessary than have been hitherto considered advisable. As reported by Dr. Field, in the symposium before the Medical Society of the State of New York, drying does not affect typhoid fever bacilli unfavorably nearly so soon as thought, one observer having found that even after cultures of the bacilli had been dried and ground up into dust, the micro-organisms did not lose their ability to multiply after more than twenty-five days had passed. This shows a surprising vitality of the bacillus, especially considering the fact that hitherto this germ has been thought to be very readily killed by such unfavorable conditions.

In the October number of the *American Journal of the Medical Sciences*, the report of an epidemic of typhoid fever in Ogdensburgh, N. Y., seems to show that typhoid fever bacilli may retain their vitality in ice for many months and then prove a fruitful source of contagion. While it has been known that mere freezing did not kill the bacilli, it has been hitherto thought that prolonged retention in a frozen condition, that is, for more than a month, did effectually prevent any further propagation of the germs.

It seems clear then that even more careful precautions than heretofore customary will have to be taken in order to guard against the possible use of infected food and water. As a source of infection the urine has now come into at least as much, if not more, prominence than the feces. As was very well said in the discussion of typhoid fever, at the meeting of the State Society, much more care will have to be taken by the examining physician in the handling of urine than is the custom at present, if infection is to be successfully evaded. The present careless habit of hospital residents in slopping around with the urine of typhoid fever patients is an index of the fact that our knowledge of the possible infectiousness of the urine is as yet only theoretical and has not entered upon its practical stage. The urine has to be disinfected quite as carefully as the stools and all vessels in which it has been contained, and all bed-clothing stained by it must be treated as objects likely to convey the disease.

With regard to treatment, the most important feature of progressive therapeutics, is a growing tendency not to limit the diet of typhoid fever patients as exclusively to milk as has been hitherto the case. As has been frequently pointed out, while milk is a liquid food when swallowed it does not remain liquid in the stomach, but is at once coagulated into masses which, under certain circumstances, are quite hard. As matter of fact, patients fed exclusively on milk pass a considerable amount of fecal material in a semisolid condition. The addition of cereals to the milk usually is very grateful to the patient and does not seem to add any special danger of producing complications. Not so long ago the cereals were thought to be likely to produce fermentative conditions in the intestinal tract which led to discomforting tympanites. The practically universal experience of prominent specialists in children's diseases, however, seems to show that on the contrary the addition of cereals to the milk in the dietary of children lessens the tendency to fermentation and that somehow the acids produced during the course of cereal digestion have an antiseptic effect and actually lessen the tendency to gas formation. This has now become the generally accepted teaching in pediatrics and on the strength of it milk, for infant feeding, is nearly always diluted with barley water or some other cereal solution that does not allow its coagulation into solid lumps in the stomach. It would seem only proper then that the general practitioner should take advantage of this important dietetic principle in the care of his typhoid fever patients.

There is no doubt, moreover, that certain meat preparations, which are very much craved by typhoid fever patients and which may be administered in the form of soups, are not only likely to add important elements almost necessary for the lowered nutrition of the patient but form also very valuable adjuncts for the digestion of food materials in such a way as not to inconvenience the patient. A mixed diet is relished and its digestion is accompanied by less subjective discomfort. Under these circumstances it is not so difficult to keep vitality almost up to the normal standard and thus lessen the danger of complications, relapses and sequelæ. It is now generally recognized that the lowered resistive vitality consequent upon an exclusive milk diet in a patient who does not digest milk well rather predisposes to hemorrhage and perforation, both of which are reported in many cases where nothing but milk was exhibited from an early stage of the disease. With any diet the physician must make it a rule to see the stools every day and judge of their possible irritating influence by actual inspection rather than from any theoretical considerations as to the harmlessness of a special diet.

MEETING OF THE NEW YORK STATE MEDICAL ASSOCIATION.

One of the most interesting features of the meeting of the New York State Medical Association during the past week (the proceedings will be found in the present issue of the Medical News, page 813) was the presence beside the President of the Association of the President of the Medical Society of the State of New York. Last week the President of the State Association had been present in his official capacity in a seat beside the President of the Society. It is evident that the two organizations which have represented the medical profession in New York are at last definitely coming together. When the formal response from the Secretary of the State Medical Society announcing that a committee had been appointed by the Society at its semi-annual meeting with full powers to confer with the corresponding committee appointed by the State Association, for the consideration of reunion, the reading was received with enthusiasm that easily proclaimed the general interest in this important reorganization movement. The words of President Bristow of the State Society, of President Wiggin of the State Association and of Dr. Simmons, the permanent Secretary of the National Association, seemed to make assurance doubly sure that disunion of the profession in New York is forever at an end.

The scientific sessions of the State Association have been attended by large numbers and the afternoon sessions of Wednesday and Thursday particularly tested the full capacity of Hosack Hall. There were many interesting features of the scientific work. On the first day, Dr. Tuttle's peper and presentation of patients in illustration of the effect of extirpation for rectal cancer proved that this condition so commonly considered to be hopeless is amenable in many cases to enterprising surgery. The discussion of this paper brought a number of opinions that show that cancer of the rectum is by no means the absolutely fatal condition that it was considered to be only ten years ago and that the former practice of making an artificial anus, leaving the cancer to progress to its inevitable fatal issue is scarcely justifiable except in extremely advanced cases. Apparently hopelessly extensive invasions of neighboring tissues and of higher portions of the intestine are not always contra-indications to radical operations but may sometimes permit of the removal of sufficient malignant tissue not only to make patients comfortable and prolong life for months, but even for years. This fact was very well brought out by the patients exhibited and by the contributions of those who took part in the discussion of this subject.

In the discussion on pneumonia it was very clearly brought out that this affection is now generally conceded to be an infectious disease having local lesions in the lung, but by no means limited in its pathological effects to these organs. The treatment therefore must depend on the other conditions present and must not be limited to local treatment directed to the pulmonary consolidation. This same truth was emphasized last week in the discussion on the treatment of typhoid fever in the proceedings of the Medical Society of the State of New York (see Medical News p. 808). These considerations mark the present positions in the rational therapeutics of these diseases. Under the influence of this idea, the poultice and even the woolen jacket become matters of secondary importance. There is no doubt that they have been abused in the past and that especially in children the application of the tight poultice has done not a little to hamper nature's effort at recovery by interfering with respiration.

The discussions on acute and chronic cholecystitis, on the ileocolitis of children and the non-operative treatment of salpingitis, on the after-

noon of the last day, brought the most successful meeting in the history of the New York State Medical Association to a fitting close. It seems not improbable that with this the twentieth annual meeting the Association will cease its existence as a separate body and become merged with the Medical Society of the State of New York. The committee of arrangements who have had the present meeting in charge may well look back with pardonable complacency on the success of this meeting as representing the acme of determined effort to give the medical association of the State a fitting place among the State medical organizations of this country.

"WORKING ONE'S WAY" THROUGH MEDICAL SCHOOL.

We have just received a copy of the report of the secretary of the Committee on Employment of Students at Columbia. While interested chiefly in the portion relating to the medical students, it is interesting to note that in the whole university 450 applied to the committee for work and that the total earning of 273, with and without aid, from May, 1902, to May, 1903, was $57,724.57—a worthy commentary on the efficiency of educated labor.

As one might suppose, this investigation shows that the time of a student of medicine is very largely taken up with college work. According to data which were not, however, as comprehensive as is wished for, thirty-one hours of each week are spent at lectures, recitations, etc., and twenty-six hours in preparation for them. Four hours go to "outside reading," thirteen hours are spent in recreation, and three hours are reserved for remunerative employment. This seems as it should be, for no man can afford to dally in preparing for his life-work; and especially is this time of preparation for medicine, when both the doctor's reputation and the welfare of his patients depend on what he has been able to learn and use to advantage in dealing with disease.

During the summer, however, six students at the College of Physicians and Surgeons reported an aggregate earning of $465.50, averaging $77.58. The academic year allowed 21 such to accumulate $789.82, an average of $37.61. As to the way such money is earned the report says: "Generally speaking, the amounts earned by students at the Medical School are small. The largest amount earned by one student, who acted as clerk, was $205. A licensed druggist among the students earned about $200 at his profession. A stenographer and typewriter made about $125. Several students, as masseurs and nurses, earned small amounts."

While all this does very well for a certain few, certainly the majority should leave employment, outside of necessary preparative work, entirely out of their daily scheme. Even if the time can be spared it leads to mental distraction and uses up a supply of nervous energy that might a great deal better be held in reserve for hospital examinations.

ECHOES AND NEWS.

NEW YORK.

Honor to an American Neurologist.—Dr. B. Sachs' Treatise on The Nervous Diseases of Children has been translated into Italian by Dr. Luigi Colombo, of Varese, and a French translation of the same work is also in press.

Day Treatment for Blackwell's Island Patients.—Commissioner Homer Folks of the Department of Charities announces an improvement in the service of the tuberculosis hospital of the Metropolitan Hospital on Blackwell's Island by the institution of a system of day treatment. At present there are about 330 male and 70 female patients resident at the hospital. Mr. Folks came to the conclusion that a number of female consumptives who would otherwise be benefited by the treatment are precluded from staying at the hospital by the necessity of attending to household duties. He has instituted the day treatment system, by which women visit the island during the day and are given the open-air treatment, together with the medicines and good food which the regular patients receive. The women return home at night.

The Legal Meaning of "Medical Attendance."—In giving opinion on the case of J. Luther Pierson of White Plains, held guilty of criminal neglect in allowing only a faith cure healer to attend a child ill with bronchial pneumonia, Judge Haight, for the Court of Appeals, defined "medical attendance" as attendance by an authorized medical practitioner. He said: "The legislature first limits the right to practise medicine to those who have been licensed and registered, or have received a diploma from some incorporated college conferring upon them the degree of doctor of medicine; and then the following year it enacts the provision of the penal code, under consideration, in which it requires the procurement of medical attendance under the circumstances to which we have called attention. We think, therefore, that the medical attendance required by the code is the authorized medical attendance prescribed by the statute, and this view is strengthened from the fact that the third subdivision of this section of the code requires nurses to report certain conditions of infants under two weeks of age 'to a legally qualified practitioner of medicine of the city, town, or place where such child is being cared for,' thus particularly specifying the kind of practitioner recognized by the statute as a medical attendant. Sitting as a court of law for the purpose of construing and determining the meaning of statutes, we have nothing to do with variances in religious belief, and have no power to determine which is correct. We place no limitations upon the

power of the mind over the body, the power of faith to dispel disease, or the power of the Supreme Being to heal the sick. We merely declare the law as given us by the legislature. We find no error on the part of the trial court that called for a reversal."

Our Health Service in a New Rôle.—The following story is told of Dr. Lederle's office in the *Sun:* "Again, last Sunday evening, the burglar alarms that perch on the outside of buildings in East Tenth street between Broadway and University place began to ring without provocation shortly after 9 o'clock and continued merrily on until 1:20 yesterday morning. Shortly after midnight a resident in the block, who had been unable to sleep for about three hours, hunted up a policeman and asked him if nothing could be done to stop the racket. 'I've done all I could,' he said. 'I've reported the thing to the station house, and that's all I can do. There's nobody in the building and I can't reach the blooming thing.' The citizen returned to his house, called up on the telephone the residence of Dr. Lederle, the Health Commissioner, and got the doctor out of bed. The citizen told his story. The Health Commissioner took the addresses of the clanging alarms and added: 'Glad you told me. I'll see at once what I can do about it.' Dr. Lederle lives in West One Hundred and Forty-third street. He received the complaint a few minutes before 1 o'clock. In twenty-six minutes thereafter an officer from the Health Department had got down to Tenth street, wherever he came from, mounted a ladder, obtained from somewhere, and muzzled the gongs. Ten minutes thereafter the residents on the block, who had been awake and cussing for hours, fell asleep. The same thing happened once last summer."

Scholarships for the College of Physicians and Surgeons.—The Harsen prize of about $600, awarded annually to that member of the graduating class who shall be found most proficient at the end of his course in all branches of medical teaching, has been divided up into scholarships. In making this change the committee of award have been guided by the fact that in past years the money has gone to those who were in no special need of it, and it was conceived that by offering the prize in parcels of $200 to one man in each of the three upper classes more real benefit would be derived from the money. Accordingly the names of students worthy of help and who hold high standing in the present Second, Third and Fourth year rank are before the Committee on Scholarships at Columbia and the awards will be made before November 1. Under an agreement made by Columbia with the college in 1891 no student can be granted free tuition by the University proper, but the present instance does not come within the limits of that provision.

The White Plague in New York.—This is the title of a three-column article in last Saturday's New York *Evening Post*, a portion of which we quote as follows: "For the last ten years the deaths from various forms of tuberculosis in these two boroughs have averaged about 6,000 annually, the great majority being due to pulmonary tuberculosis, or consumption. How can the indifference of the public mind to this condition of affairs be explained? It seems that a plausible explanation lies in the fact that for generations people have been taught to believe that consumption was hereditary, and, when once contracted, incurable; that a certain large portion of each community had always been afflicted with this scourge and always would be; that those who were predestined to contract it would do so, and there wasn't much use in doing anything to prevent it. Three or four years ago a careful canvass was made through all the hospitals, and it was found that there were a little over 1,000 beds which could be used for tuberculosis patients. Since that time about 500 more have been added, but what a meagre provision this makes for the large number who require and desire hospital care! The available beds are always filled, and the readiness with which patients went to the temporary sanatorium established by the Department of Health on North Brother Island this past summer, until the limit of its capacity was reached, proves the necessity for institutions of this sort. It is along this line that the citizens of New York should wage a determined warfare for greater protection. If the people are aroused and make it plain that such hospitals must be erected, the authorities will heed the cry, and it will be done. The time is ripe for such a movement; the great need is an aroused public sentiment. There should be two classes of hospitals—one designed solely for protection to the healthy, where advanced cases, soon to become bedridden, and great sources of infection, may be placed. This class, which should accommodate at least 1,000 patients, must necessarily be situated in or very near the city for the purpose of rapid and easy transportation. For $5,000,000 sufficient hospitals, sanatoria, and dispensaries could be erected and equipped to provide proper accommodations for those requiring hospital care and treatment, and for the home treatment of those able to do light work. If the people of this city could only realize how many thousands suffering from this plague are employed in working upon the garments which go into their homes, in laundries, restaurants, and other places which bring them in close relations to the public, with all its dangers of infection, they would never cease in their demand for greater protection. Already one dispensary is being built for the home cases, to be under the charge of the Department of Health, and an appropriation will be asked from the Board of Estimate for one sanatorium which will accommodate 500 patients. Every man who has a vote and who cares not only for the life and health of the community, but the safety of himself and his family, should make it his business to demand the granting of this appropriation and of others in the future, until this city shall stand as a model for its care of the poor consumptive and the protection of its citizens from the ravages of the white plague."

Officers of New York State Medical Association.—The following officers were elected for the ensuing year: President, William Harvey Thornton, of Buffalo; Vice-President, Charles S. Payne, of Sullivan County, N. Y.; Treasurer, F. A. Baldwin, of New York City; Secretary, Guy Davenport Lombard, of New York City. Delegates to the American Medical Association: E. Eliot Harris, of New York City; J. W. Grosvenor, of Erie Co.

PHILADELPHIA.

Increase in Smallpox.—During the week ending October 17 there was a fresh outbreak of smallpox in the city for which the health officials are at a loss to place the cause. Refusal of vaccination is the only apparent reason. The new cases for the week numbered 54, an increase of 43 from the previous week.

Meeting of State Poor Directors.—The annual meeting of the Pennsylvania Association of Directors of the Poor and Charities was held at Lancaster October 13 and 14. Among the subjects under dis-

cussion was the placing of destitute children in country homes, the reputed mismanagement of Philadelphia institutions, and the question of caring for the sick. After a spirited discussion it was decided advisable to employ trained nurses for the sick in institutions for the poor, as invariably where they have been employed the death rate has materially decreased.

Death of Dr. Alexander.—Dr. H. M. Alexander, the founder of the vaccine farms that bear his name, died at his country seat at Conewago, October 13, aged fifty-two years. He graduated from Bucknell University in 1876 and in 1882 founded the Lancaster County vaccine farms.

Pathological Society.—At the meeting of the Philadelphia Pathological Society held October 15, the following officers were elected for the ensuing year: President, Dr. Alfred Stengel; Vice-Presidents, Drs. Joseph McFarland, M. P. Ravenel, W. M. L. Coplin and Joseph Sailer; Secretary, Dr. D. J. McCarthy; Treasurer, Dr. T. Westcott; Curator, Dr. A. P. Francine; Recorder, Dr. David Riesman.

Consulting Physicians for Eastern Penitentiary.—The following specialists have been recently appointed consultants to the Eastern Penitentiary in this city: Surgeon, Dr. Robert G. Le Conte; Physician, Dr. Judson Daland; Ophthalmologist, Dr. G. E. De Schweinitz; Otologist and Laryngologist, Dr. F. R. Packard; Alienist, Dr. Horace Phillips. The members of this staff will receive no remuneration for their services. Heretofore the resident physician, Dr. W. W. Leach, has been unable, except at his own expense, to call a physician in consultation.

Report of State Medical Examiners.—The annual report of the State Board of Medical Examiners shows the following averages obtained by medical students at the examinations of the State Board last June and the percentages obtained:

	Examined.	Passed.	Failed.
Jefferson College	92	83	9
Medico-Chi College	67	63	4
Woman's College	15	15	0
West Penn College	83	67	16
University of Pennsylvania	49	48	1

	Per cent. passed.	Per cent. failed.	Aver'g.
Jefferson College	90.22	9.78	79.45
Medico-Chi College	94.02	5.96	79.37
Woman's College	100	00	81.48
West Penn College	80.72	19.28	78.63
Univ. of Penna	97.96	2.04	83.22

Finsen Light at University of Pennsylvania.—Extensive experiments with Finsen light will soon be begun at the University of Pennsylvania as a result of the State appropriation of $25,000 for an X-ray laboratory and Finsen apparatus. The new department will be connected with the University hospital and will be housed in an addition to be built to one of the wings of the Agnew pavilion. The fourth floor of the present building will be extended over one of these wings to form a sun parlor which is being provided as a part of the scheme. Dr. H. K. Pancoast, who has had charge of the X-ray plant at the hospital will have supervision of the new department.

Judge Criticises Condition of Insane Asylum.—In the Pottsville court, Judge O. P. Bechtel recently criticised the crowded condition of the State Hospital for the Insane at Harrisburg, saying that 20 or 30 inmates were here and there huddled in bunches. The Superintendent of the Asylum states that Judge Bechtel is correct, the reason being that they are obliged to receive all persons committed by the courts and consequently have now 913 patients, when the capacity of the institution is but 700. Some rooms do contain 30 patients and they are severely crowded. Increase in room will soon make the capacity 800, but that will not relieve the congestion. The overcrowding has been present for ten years, but repeated statements in annual reports have failed to bring about a change.

Active Campaign against Tuberculosis.—At the fall meeting of the Pennsylvania Society for the Prevention of Tuberculosis vigorous plans were laid to educate the public in the sanitary and hygienic means of preventing the spread of tuberculosis. Meetings to be addressed by prominent physicians who will present to the people in a readily understood way facts regarding tuberculosis, its danger and control, will be held in every section of the city. The permission of Director Martin, of the Bureau of Health, will be sought for the erection of municipal sanitary billboards on lamp-posts or on posts of special design similar to those now in use in Fairmount Park. On them will be displayed circulars containing sanitary regulations. Newspaper advertising will also be used for the same purpose. Each week, in large type, will appear a short article by a physician, followed by the sanitary regulations, which if observed, will do much to prevent the spread of infection.

Jefferson Medical College.—Captain Charles F. Kieffer, Assistant Surgeon, U. S. A., will deliver to the senior class a course of ten lectures on Tropical Medicine. The list of subjects includes Dysentery, Sprue, Tropical Abscess of Liver, Uncinariasis, Filariasis, Trypanosomiasis, Elephantiasis, Beriberi, and Hygiene of Warm Climates. This year for the first time instruction in routine ward work will be given in the hospital by the resident physicians. Sections of the senior class, containing 12 men each, will spend 1½ hour each morning in either the men's surgical, women's surgical, or gynecological wards observing cases, writing histories, seeing cases dressed, etc. For the present year, at least, attendance upon this work will be optional.

New Hospital Buildings for Hahnemann.—Improvements to cost $500,000 will soon be begun by the trustees of Hahnemann Hospital. It is planned to erect three buildings on the plot of ground adjoining the present hospital building. One of these will be a home for nurses and is to be 40 by 84 feet in size and seven stories high. In the rear of this will be an equal sized building for a maternity and women's hospital. The third building will be utilized for a power plant, laundry, and dormitories. Improvements in the present buildings are also planned.

Laboratory of the Philadelphia Hospital.—Through the efforts of Dr. Martin, Director of Public Health and Charities, and Chief Resident Physician Biggs, the laboratory of the Philadelphia Hospital has been refitted and the service entirely reorganized. It is to be known as the Clinical Laboratory of the Philadelphia General Hospital and, with the museum of the institution, will be placed in charge of a director who shall serve throughout the entire year. The director, who has the privilege of appointing one or more assistants, must examine all clinical material sent to the laboratory, supervise the gross specimens used for teaching purposes and those removed at autopsy, and work up autopsy material when suitable. All articles written on material obtained at the hospital are to be credited to the

laboratory whether worked up there or by the visiting pathologists or physicians. Dr. Randle C. Rosenberger, who during the past summer did much to put the laboratory on a working basis, has been appointed the first director of the new department.

To Study Epilepsy.—The National Association for the Study of Epilepsy will hold its Third Annual Meeting in the Hall of the College of Physicians in Philadelphia on the afternoon and evening of November 5 next. The program includes, among other papers, the following: Presidential Address, by Wharton Sinkler, M.D., of Philadelphia, Pa.; A Treatment Room for Epilepsy and Some of Its Results, by Everett Flood, M.D., of Palmer, Mass.; The Treatment of Epileptics in Private Practice, by Wm. N. Bullard, M.D., of Boston, Mass.; Progress of the New Jersey Village for Epileptics at Skillman, N. J., by H. M. Weeks, M.D.; The Early Diagnosis of Epilepsy from Diseases Causing Epileptiform Convulsions, by Charles K. Mills, M.D., of Philadelphia; Report of a Case of Removal of the Ovaries and Tubes for Epilepsy, by A. H. Halberstadt, M.D., Pottsville, Pa.; Some Considerations Regarding the Surgical Treatment of Epilepsy, by J. Chalmers DeCosta, M.D., Philadelphia; Report of Cases of Trephining for Epilepsy, by John C. Munro, M.D., of Boston; Some Remarks on Animal Epilepsy, by L. Pierce Clark, M.D., of New York; The Psychological Aspects of Epilepsy, by W. P. Spratling, M.D., of Sonyea, N. Y. The Association extends a cordial invitation to all persons interested in charity, and especially in the care and treatment of epileptics, to attend its annual meetings. Applications for membership may be made to the President or to Dr. Wm. P. Spratling, Sonyea, N. Y., Secretary.

Pennsylvania Nurses' Convention.—The Pennsylvania State Nurses' Association held its first annual convention in Pittsburg on October 5. The organization of the State nurses was preliminary to the annual convention of the American Society of Superintendents of Training Schools for Nurses of the United States and Canada. A law similar to that which exists in New York, New Jersey, Virginia, and North Carolina, providing State examination boards for nurses, is greatly desired by Pennsylvania nurses, and the organization of the State nurses was effected with the especial object of obtaining a State registration law.

CHICAGO.

Changes at Dunning.—Details of a plan for the rehabilitation of the county institutions at Dunning were recently announced by President Foreman of the Board of County Commissioners. The expenditure of more than $500,000 in new buildings and improvements is involved and several scientific administrative reforms will be adopted. A summary of the plan follows: Erection of three new cottages for insane patients at an expense of $60,000. Erection of five cottages for consumptive patients, with a central administration building at an expense of $125,000. Erection of a modern morgue and pathological laboratory with an amphitheater for lectures. Erection of a training school for nurses and attendants. The present consumptive hospital to be converted into a hospital for invalid insane. Erection in Chicago of a branch hospital for consumptives where incurable cases may be treated. Erection of a central power house, surrounded by shops, where the patients may be provided with light employment, making clothing, brushes, and brooms for the use of the institutions. Installation of a vacuum system of steam heating in all the institutions. Light manual labor to be provided for all patients in good physical condition. Books and games to be provided for patients. Clubrooms for the use of the nurses and attendants of the institutions. Better protection against fire. Mr. Foreman disclosed his plan for the metamorphosis of the county institutions in an address delivered at the first meeting of the Citizens' Advisory Board, appointed several months ago to assist in the management of the county asylum for the insane, hospital for consumptives, and the infirmary. The advisory board heartily approved the reforms recommended by President Foreman and the commissioners present pledged themselves to carry out the suggestions. The members of the advisory board are Alexander A. McCormick, Charles H. Wacker, Louis M. Stumer, Willis S. Herrick, Theodore A. Kochs, William J. Onahan, Charles E. Bolles, Julius Rosenwald, William A. Alexander, Dr. Frank Billings, Charles O. Goss, John Rohlwing, Charles F. Cooke, Dr. J. B. Murphy, Dr. Sidney Kuh, Dr. I. A. Abt, Dr. E. R. LeCount. Dr. Murphy was elected chairman.

Fee for Appendicitis.—A jury in Judge Hutchinson's courtroom awarded Dr. Alex. Hugh Ferguson a verdict of $1,000 for medical services rendered Frank L. Loring, Jr., and his wife. Dr. Ferguson sued for $5,000. The physician declared he performed an operation on Loring for appendicitis, and, later, treated him for injuries sustained in a railroad accident. Another item was treatment given Mrs. Loring. Loring averred his salary is $15 a week and that the charges were too high for a person in his station of life to pay. Several physicians were summoned to testify in the case. Dr. J. B. Murphy declared no regular price could be fixed. Some of his patients, he said, he had charged $5,000 for an operation for appendicitis. From others he had received nothing.

Mortality for July in Illinois.—According to the mortality report for that month just published by the State Board of Health, there were, during July, 1903, 4,903 deaths in the State of Illinois. This report is based on the certificates of deaths received in the office of the board from physicians outside of the larger cities of the state in which burial permits are required, from the registration officials of these cities, and from the coroners of the several counties. These certificates were forwarded to the State Board of Health under the provisions of the birth and death law of 1903 which repealed the Act of 1901 requiring a burial permit. The report has been delayed by the failure of several county clerks to furnish physicians and coroners with blank forms for reports of deaths. A few weeks ago the State Board of Health had printed and distributed among the physicians of the state, over six thousand books of blank forms, and as a result several hundred belated reports have been received by the board during the past week. The published death-rate is slightly less than that of July, 1902, when 5,107 deaths were reported to the county clerks, but it is the opinion of the State Board of Health that many additional reports for July will be received during the present month. The reports for July, 1902, should be absolutely correct, as it was then obligatory on physicians to furnish a certificate of death before the burial of the body. The ten principal causes of death and the number due to each are given as follows: Gastro-enteritis in infants, 673; tuberculosis, 537 (tuberculosis of the lungs, 447; other forms, 90); accidents, 483; pneumonia, 218; typhoid fever, 88; suicide, 70; diphtheria, 57;

whooping cough, 50; measles, 39, and scarlet fever, 32. The reports for July, 1902, showed 681 deaths from gastro-enteritis in infants and 542 deaths from all forms of tuberculosis.

Donation to Presbyterian Hospital and the Chicago Home for Incurables.—By the will of the late Mr. Henry J. Willing, both of these institutions received $5,000. The amount donated to the Presbyterian Hospital is to be used to maintain a bed, to be known as the Mary Jane Willing fund, in memory of his mother.

Illness of Dr. Billings.—Dr. Frank Billings recently underwent an operation for gall-bladder infection. The operation was performed by Drs. L. L. McArthur and Arthur D. Bevan. The distinguished patient is doing nicely.

Headaches and Their Treatment.—Dr. Julius Grinker read a paper on this subject before a recent meeting of the Northwestern Branch of the Chicago Medical Society. Headache in most instances is only a symptom; in some it is the most conspicuous symptom, while in still other cases it is the only symptom and may assume the dignity of a distinct disorder by itself. Factors entering into its production are: Organic diseases of the brain or its membranes; circulatory disturbances, such as anemia and hyperemia, arteriosclerosis, toxicity, infections, etc. Irritation of the sensory nerve-filaments of the dura by pressure or inflammation is probably the direct cause of most headaches. In the diagnosis of headaches attention should be paid to the mode of onset, duration, intensity, and localization; each of these qualities is to be given due weight only in connection with accompanying symptoms. Cerebral organic headaches are usually very intense, circumscribed and constant, with or without remissions. They are described as cutting, boring or tearing; they may be dull and constant. Headaches caused by syphilis are worse at night or come on only towards evening. The nearer the lesion is situated to the cortex, the more intense is the pain and the more likely is percussion apt to elicit tenderness. The location of pain does not always correspond to the seat of the lesion. The eye fundi, the circulatory apparatus and the secretions will often furnish corroborative evidence, and enable one to make a correct diagnosis. Headaches due to circulatory disturbances in the brain cavity are divided into those caused by: (*a*) active hyperemia, (*b*) passive congestion, (*c*) enema, (*d*) arterial changes. (1) The headache of active hyperemia is perceived as a fulness in the head, with throbbing of arteries, injected conjunctivæ, flushed face. The headache is either diffuse or confined to the vertex; and is made worse by stooping or lowering of the head. (2) The headaches of passive congestion are not frequent. Causes are all conditions which interfere with the return circulation, viz., heart diseases, tumors pressing upon veins, tight clothing about neck. (3) Anemic headaches are often vertical in location, and are usually described as a hot, burning pain. They are relieved by the recumbent postures. (4) Arterial changes produce headache, either mechanically or by the anemia due to narrowing of lumen. The neuroses, hysteria, epilepsy, neurasthenia, etc., offer quite a contingent of all headaches. The hysterical headache is often described as though a nail were being driven into the top of the head; is called clavus hystericus and is similar to the syphilitic headache, except that the latter is worse at night, and the former is often improved by diverting the patient's attention. A careful search will reveal some of the so-called stigmata of hysteria. The epileptic headache usually comes on after the fit; is of the dull type, and sleep often terminates it. If the patient is forced to keep awake after a spasm, a postepileptic psychosis may develop. Headache may precede or may be the equivalent of a fit. The patients affected with epilepsy can mostly be recognized by their dull, listless appearance, the dilated pupils and sluggish mentality. Neurasthenic headaches are common and should offer no difficulty in diagnosis. These patients describe their headaches as paresthesias rather than pains. Many say they feel as though a tight band was constricting their heads or their skullcap is being lifted away from their heads, or there is a feeling of emptiness or fulness in the head. Most often they speak of a "misery" in the head, but no headache. The reflex headaches, the so-called "eye" and "uterine" headaches are in many instances only ordinary myalgic affections of the temporal and occipitofrontalis muscles. However, there are some genuine reflex headaches caused by disease in the accessory cavities of the head. The pneumogastric nerve, with its extensive distribution, may be held responsible for the headaches due to disturbances in the thoracic and abdominal cavities.

Toxemic Headaches.—Under this heading are included headaches due to the infections and poisons, both organic and inorganic. To mention a few: Typhoid, scarlet fever, smallpox, malaria, prodromal stage of syphilis, alcohol, nitroglycerin, quinine, opium, cocaine, copper sulphate, chloroform, ether, lead, tea, coffee, tobacco. The headaches due to defective elimination of waste products may also conveniently be placed here: uremic headaches, gouty, lithemic, rheumatic, gastrohepatic derangements, constipation headaches. All the toxic headaches have this in common, that they are usually of a dull, heavy type, are most often frontal; are apt to be worse in the morning and pass away in the course of the day. The headache of migraine begins in childhood or early youth; heredity can be traced in the majority of instances. It occurs at intervals and lasts from a few hours to a day. Vertigo, nausea, or vomiting may either accompany or wind up the attack, during which there is hypersensitiveness to light, heat, and noises. The headache may be unilateral throughout, or may extend from one side of the head to the other. The so-called auræ, such as zigzag lightning, scotomas, temporary hemianopsia, or aural manifestations may precede the attack. In its entire make-up, the migrainous headache may be considered the sensory equivalent of the cortical or subcortical motor explosion called epilepsy. There is one class of headaches for which no cause is usually ascertainable. These are the so-called nervous headaches, also called idiopathic. They are the expression of a general nervous constitution, exist from early childhood, and appear to be inherited. This headache is chronic in type. It may last months, or years, and may even accompany the individual through life. It may occur in paroxysms or be constant. Trivial causes, such as a slight indiscretion in diet, will bring them on, or they appear without any cause. The pain is variously described: boring, pressing, tearing; it may be a dull pressure, or very intense, with hyperesthesia of the scalp. Women are more predisposed than men; they suffer in their general health, become irritable and melancholic, and may become disabled from following a vocation. Altogether, it has a tendency to sour their dispositions. The treatment of a headache must be directed toward eliminating its causes. In anemia, iron, arsenic, bitter tonics, and rest in

bed are urgently indicated. In the headaches due to gastro-intestinal disturbances, antifermentatives and intestinal antiseptics are demanded. A brisk calomel purge has relieved many a headache due to constipation. In "reflex" headaches, the organs at fault should receive proper attention, and often the aid of specialists will have to be called in. Neurasthenic headaches are treated along the lines of the treatment for neurasthenia. A good dose of bromides has often done good. Hysteria requires its own treatment. The subjects of hysterical headaches being dominated by autosuggestions will tax the physician's skill to the utmost. Indirect suggestion and a frequent change from one remedial agent to another, beginning with the mildest and holding the most powerful psychic agents in reserve, are often successful. The headaches of arteriosclerosis are treated with nitroglycerin and small doses of the iodides. One point in the treatment of all varieties of headache is to give the patient immediate relief and such can usually be secured by the administration of the coal-tar products, such as antipyrin, phenacetin, and others of this class. The heart should always be guarded in the administration of the depressant remedies; or else we may cure the headache but lose the patient.

There is no specific for the headache of migraine. It either disappears or becomes less frequent and milder at the menopause in women, and in men at the age of sexual involution. During the attack, the coal-tar remedies, such as phenacetin, antipyrin, acetanilid, may mitigate the pain. It is very bad practice to resort to morphine except in the most aggravated cases. As a rule, patients prefer to be left alone in a darkened room with exclusion of all noises; no food is taken until the attack has passed off. Between attacks a reliable fluid extract of cannabis indica may be used in ascending doses, beginning with 2 to 3 drops three times daily until a dose just short of poisoning symptoms has been taken for a few weeks. This is the only thing that has been found beneficial in some cases, and therefore a trial appears to be indicated in a malady where so little can be done. For the so-called nervous headaches we must order regular exercise, fresh air, a simple diet, hydrotherapy local and general, local applications of menthol, ether, chloroform, massage of the scalp, if necessary. Regular stools and good sleep are essential. Galvanism cautiously applied to the head in the strength of 2 to 3 milliampéres has sometimes been effective. Of drugs, the most useful are: antipyrin, salipyrin, salophen, phenacetin, caffeine and the caffeine sodio-salicylate and bromides.

GENERAL.

Oil for Laredo's Mosquito Pest.—The official yellow-fever bulletin showed 27 new cases and two deaths up to October 14. The fever is now in every portion of the city. Dr. Tabor is expecting the arrival of a carload of oil from Beaumont, when the entire city will be saturated, and it is hoped the yellow fever mosquito will be exterminated.

Greenwich, Conn., Hospital Gets $75,000 Gift.—The town of Greenwich, Conn., on Oct. 14 declared the acceptance of a gift of a $75,000 isolated plant of four buildings from Robert M. Bruce and his sister Sarah E. Bruce for a contagious disease and emergency hospital. It is opposite Putnam Cemetery, on high ground, and has one stone house for smallpox and two others for other contagious diseases. The caretaker's house is equipped as an emergency hospital. Mr. Bruce once complained that his taxes were too low and that he and other rich men had been robbing the town by paying too small assessments. He said he would give it all back to the town in time. He now plans to build a $125,000 town building and give it to the town, and has purchased the land.

Gifts to Two Medical Colleges.—Two medical institutions are the public beneficiaries under the will of Dr. George Haven of Boston, which was filed for probate to-day. The Harvard medical school received $25,000 outright and a share in a residue, and the Boston Lying-in Hospital received the doctor's books and instruments, a gift of $20,000, and shares equally with the Harvard medical school in a residue. The executor estimates that the estate will amount to $30,000.

Mississippi Valley Medical Association.—The following officers were elected for the ensuing year: President, Dr. Hugh T. Patrick, Chicago, Ill.; First Vice-President, Dr. Bransford Lewis, St. Louis, Mo.; Second Vice-President, Dr. Geo. W. Cale, Springfield, Mo.; Secretary, Dr. Henry Enos Tuley, Louisville, Ky.; Treasurer, Dr. Thomas Hunt Stucky, Louisville, Ky. The time and place for holding the next annual meeting were left to the President, Secretary and Treasurer, to decide.

Toy Pistols a Curse.—The State Board of Health of Ohio to-day adopted a resolution by which their secretary is directed to take steps to prevent the sale of "toy pistols and other explosive appurtenances." The resolution cites that 600 persons were killed, 100 made blind, and 1,000 others injured on the last Fourth of July. The board therefore declares it to be the duty of health authorities to abolish the evils attendant upon the celebration of Independence Day.

Driving out Yellow Jack.—Prof. George Beyea, of Tulane University, an acting surgeon in the United States Public Health and Marine Hospital Service and a member of the Yellow Fever Commission sent to Mexico to study the source and progress of the disease, has returned to New Orleans, after an absence of five months. He speaks highly of the measures taken by President Diaz and the Federal Government of Mexico to fight yellow fever in the Vera Cruz district. As a result of their activity, when Prof. Beyea left Vera Cruz, in the first week of October, only five cases of fever were reported in the city. President Diaz is most desirous of ridding the country of the disease, and will undoubtedly carry on a vigorous campaign this winter to that end, to destroy completely the seeds of the fever in Vera Cruz and other infected centers. Prof. Beyea believes that Mexico, like Cuba, will be entirely free from yellow fever by 1904, and this will mean the practical extermination of the malady in the Gulf of Mexico.

Abolish the Toy Pistol.—At the Twenty-ninth Annual Session of the Mississippi Valley Medical Association held at Memphis, October 7, 8, 9, the following resolutions were adopted: In view of the fact that more than 400 deaths from tetanus occurred following the Fourth of July celebration of 1903, as shown by the statistical report elaborated by Dr. S. C. Stanton of Chicago, and published in the *Journal of the American Medical Association* of August 29, 1903, the great majority of which might have been prevented had proper precautions been taken: therefore

Be it Resolved, That the conclusions which follow, as offered by Dr. Stanton, in a paper presented before the Association, at the above meeting, be endorsed as the sense of the Association: (1) Enforcement of existing laws regarding the sale of toy pistols and other dangerous toys. (2) Enactment of laws by the nation, States and municipalities, prohibiting the manufacture and sale of toy pistols, blank cartridges, dynamite canes and caps, cannon crackers, etc. (3) Open treatment of all wounds, however insignificant, in which, from the nature or en-

vironment there is any risk of tetanus. (4) Immediate use of tetanus antitoxin in all cases of Fourth of July wounds, or wounds received in barnyards, gardens, or other places where tetanus infection is likely to occur. (5) As a fornlorn hope, the injection of tetanus antitoxin after tetanus symptoms have appeared.

Obituary.—Dr. Jean F. Chauveau died last week at his home, 31 West Sixtieth street. He was a graduate of Geneva, and was a member of the State Medical Association, the Academy of Medicine, the County Society, the Neurological Society, and the Society of Medical Jurisprudence. He leaves a widow and a son, Dr. Jean F. Chauveau, Jr., of this city, whose mother was Dr. Chauveau's first wife. Dr. Chauveau was about seventy-five years old, and death was due to a general breaking down of the system. He celebrated his fiftieth anniversary of entering into practice last June.

Dr. John L. Waldie, a well known physician in Brooklyn, died last Sunday, at his residence, No. 254 McDonough street, from kidney trouble, after an illness of two weeks. Born in Brooklyn thirty-one years ago, he was a graduate of the Long Island Medical College, a member of St. Mary's Hospital staff, and also of the Kings County Medical Society.

Dr. Robert Aberdein, for many years one of the most prominent physicians in Central New York, died last week in Syracuse at the Hospital of the Good Sheperd. Dr. Aberdein had been ill for three years and had been at the hospital three weeks.

CORRESPONDENCE.

THE EXPOSITION FOR INFECTIOUS DISEASES IN DRESDEN.

(From Our Special Correspondent.)

Dresden (Saxony), Germany, October 1.

THE STÄDTE AUSSTELLUNG—EPIDEMIOLOGICAL BUILDING—TUBERCULOSIS EXHIBIT—CHILDREN'S DISEASES—TYPHOID AND CHOLERA ASIATICA—SKIN DISEASES—MALARIA—SMALLPOX—LEPRA—PLAGUE—VENEREAL DISEASES—MICROSCOPICAL AND BACTERIOLOGICAL EXHIBIT—SERUM INSTITUTES.

For the last four months the residence city of Dresden, in Saxony, has been the seat of an exposition which has steadily attracted, and still attracts, thousands of interested tourists. The exposition is the first of its kind in history, and calls itself the "Deutsche Städte Ausstellung"—a combination of words which cannot be rendered into corresponding English, but which implies that the German cities have combined to give an exposition of all the factors that contribute to municipal progress. There are, of course, innumerable phases of so vast a project: modern methods of transportation, of lighting, of paving, of drainage, sewage systems, hospitals, policing—all of these and many other phases of that modern Proteus, the city, demand recognition and consideration, if, indeed, the exposition is really to fulfil the promise of its title. That the exposition has proved a tremendous success is simply another evidence of German energy and skill. One aspect of the exposition which has aroused particular attention and has met with unstinted praise is the department of public hygiene. A roomy, well-lighted building, especially erected for the purpose, has been devoted to the elucidation of what is fortunately one of the brightest and most promising sides of the terrible "city problem." Here are gathered contributions from many of the greatest specialists of Europe, from pathologists, from the governmental serum institutes, from municipal statisticians, and from the great manufacturing firms. The result is extraordinary. The exposition contains much that is old, much that is known to every graduate in medicine. On the other hand, it contains just as much that has never before been presented, much that is absolutely new. But whether old or new, it may truly be said that every detail has been presented in a manner to drive home its significance. It has evidently been the aim not only to interest the physician, the Fachmann, but to convey to the educated public at large some idea of the tremendous progress of hygiene, and of its results to mankind within the past half century. The aim has certainly been justified by the results: the building is crowded from morning till night, and has proved the greatest attraction of the vast exposition.

It would be very difficult to convey a complete idea of the contents of the building which is blazoned "Volkskrankheiten und ihre Bekämpfung." More than 200 microscopic specimens, presented by such men as Ruge, Duerck, and Pick of Prague, a thousand or more bacteriological cultures, many pathological preparations, innumerable charts, pictures, plates, and manufactured products—all those would seem to make confusion worse confounded. The arrangement of the collection, however, is so admirable, that one may study each single aspect of the subject completely in the room especially devoted to it, and so, by passing from room to room, acquire a clear notion of the entire complex.

The first room is devoted to tuberculosis. The city of München has presented some interesting tables covering the city mortality from this disease during the period 1880 to 1900. From these tables it is manifest that within this period there has been a decrease in the mortality at every period of life, but this decrease reaches the very considerable maximum of 10 per cent. for the ages between thirty to sixty years. Other tables present the mortality in the various countries of Europe during the year 1900, reckoned on a basis of 1,000,000 population; Russia leads with 4,000 deaths, while England, with 1,300 is at the bottom of the list. Schmorl, the pathologist of the city hospital of Dresden, has analyzed 400 autopsies from an entirely new point of view. He reaches the following very remarkable conclusions: Between the ages of five and fourteen years, active tuberculosis, previously unsuspected clinically, and first discovered at autopsy, is found in 20 per cent. of the cases; between eighteen and forty years, in over 10 per cent.; forty to sixty years, 15+ per cent.; sixty to ninety years, 20+ per cent. Quiescent tuberculosis, discovered first at autopsy and previously unsuspected, exists in almost 30 per cent. of the individuals between fourteen and thirty years; from the age of thirty years, the proportion of cases in which it is thus found continually increases, reaching almost 60 per cent. for the ages seventy to eighty years. When one stops to consider that the autopsies were almost entirely upon individuals who had been studied under particularly favorable circumstances, in the hospital, the proportion of undiagnosed cases is truly appalling. Another table presents a comparison of the number of cases presenting carcinoma with those presenting a combination of carcinoma and tuberculosis, at successive periods of life. It is rather striking that between eighteen and thirty years there are almost as many cases of carcinoma without tuberculosis as with it. Other tables illustrate the relation between the mortality from tuberculosis to the general mortality at successive periods of life. Between five and fourteen years, the mortality from tuberculosis is 50 per cent. of all deaths; fourteen to eighteen years, 33 per cent.; eighteen to thirty years, 50 per cent.; from thirty years upwards, the mortality relatively decreases. The figures are larger than those hitherto presented. The fatality of the disease is shown by the fact that of the cases between the ages of one and five years over 25 per cent. perish; eighteen to thirty years, more than

33 per cent.; thirty to forty years, more than 25 per cent.; at all other ages, it is less than 20 per cent.

The city of München presents an analysis of the cases of tuberculosis on the basis of occupation. Of 65,766 cases in the Poliklinik, 4,177 were diagnosed as tuberculosis. The greatest number of cases came from the classes described as workers in dust, and of these, especially those in metal dust, next come the workers of wood, such as carpenters, then the manufacturers of clothing, while the fisherfolk and farmers are apparently hardly represented. Notwithstanding these disheartening figures, the tables indicating the mortality from tuberculosis for successive years demonstrate that there has been a considerable reduction during the last twenty years in all the German cities except Breslau; in Dresden the mortality has fallen within the last thirty years from 50 to 20 per 10,000. Various other statistical tables are interesting. An English compilation shows that there is an invariable relation between the amount of water in the ground and the mortality from tuberculosis, in such wise that an increase in the former always occasions an increase in the latter. Figures from Hamburg for 1885 to 1900, show that the mortality from tuberculosis of each class of the population is in inverse proportion to its income. In addition to all these instructive tables, there is a very fine series of wax casts from the collection of Prof. Lassar, of Berlin, illustrating tuberculosis of the skin; Neisser, of Breslau, has presented a series of photographs. Schmorl has contributed the pathological specimens.

The next room is devoted to infants. Very interesting by way of comparison with a recent article by Freeman in the Medical News, are the city statistics of Nüremberg for 1861 to 1898. They show that although the general mortality has notably decreased, that of infants has been hardly affected. It would seem, according to the comment of the city statistician, that all the hygienic advances which have made during these years, and which have proved so beneficial to the population at large, have hardly touched the roots of infant mortality. The etiology of this tremendous mortality is the subject of a very large number of tables from various sources. A comparison of European countries shows that the mortality is greatest in Russia, where it reaches the awful proportion of 30 per cent.; strange to say, Germany is second. Mortality from all causes, but notably from diarrhea, is greatest from July to October. Dresden contributes a table in which the mortality of infants fed on mother's milk is compared with that of those brought up on artificial preparations or on cow's milk, and, as might be expected, the mortality is enormously greater among the latter. The bacteriology of milk is illustrated by a very full series of plates. Some new facts are brought out with regard to the amount of foreign material, chiefly cow dung, present in milk. This is determined by weighing the filtrate of 1 liter of milk. A vast number of specimens of milk from different cities was examined in this manner, and it was found that dirt was invariably present, varying in amount from 1 to 75 milligrams per liter. The first milkings always contain the most dirt, the amount of which decreases proportionally as the milking proceeds. From a hygienic standpoint, it would be wise to discard the first milkings. The results of giving filters of gauze, or other material, to the dairymen does not appear to be productive of benefit, inasmuch as the dirt, indeed, decreases, but the number of bacteria increases. The subject of milk is further illustrated to the laity by a concrete analysis of five liters of cow's and the same quantity of human milk, whereby the very considerable differences in the proportion of the various ingredients is forcibly borne home. Pasteurizers and sterilizers of every form and description are exposed and explained. It is safe to say that the educational value of this room alone is sufficient to reward the management for all their efforts.

The third room is devoted to typhoid fever, cholera Asiatica, and epidemic dysentery. The pathology and bacteriology of these conditions are amply illustrated, but the most interesting feature is the epidemiological analysis. A comparison of the hitherto recorded typhoid epidemics upon basis of etiology reveals the fact that 70 per cent. are due to infection by drinking water, 13 per cent. to milk, and 3½ per cent. to other foods; this leaves a balance of less than 15 per cent. to be accounted for by other agencies. It will be observed that the statistics are in flat contradiction to the recent statement of Koch's, that the majority of typhoid epidemics are due to contact infection. A large number of charts, maps, and tables are produced to support the theory of infection by water, but it cannot be said that they are convincing. The city of Berlin, particularly, presents a very elaborate and ingenious chart by which at a glance it is possible to compare the improvement in the water supply with the mortality from typhoid for every year since 1870. A decrease in the death rate from typhoid is undeniably evident, but it does not show the least tendency to run parallel with the improvement in the water supply. Indeed, this problem is so extremely complicated that it cannot profitably be presented in the form of charts. To mention only one very serious disturbing factor, there is the enormous difference in the mortality of the various typhoid epidemics, which may entirely vitiate the records by elevating the mortality curve, whereas a corresponding infection curve would actually fall. Unfortunately it is only very recently that the reporting of typhoid cases has become compulsory, so that an infection curve cannot be constructed except for the last few years. Another disturbing element is the fact that other hygienic improvements have run parallel with the betterment of the water supply, so that it becomes impossible to determine the part played by each factor in producing the decreased mortality. This is especially true of canalization, which has been known to decrease the typhoid mortality, ever since the fifties in the last century, when it was introduced in conformance with Pettenkofer's theory of the connection between "Grundwasser" and typhoid epidemics. That some such connection, the rationale of which is still entirely obscure, does in reality exist, is evidenced by charts affording a comparison of the water level with the mortality from typhoid during the last sixty years in Hamburg and the last thirty years in München, it is almost invariably found that the two curves run in opposite directions, in other words, there is an imperfect inverse proportion between the two sets of figures for each year. Finally, infection by contact is represented in a chart in which the number of direct infections, involving especially the nursing staff and the doctors, of many of the large German hospitals are compared. In the Hamburg hospital, in which the conditions are apparently ideal, these infections number only 1 per cent., whereas in the Prussian military hospitals they run as high as 6 per cent.

Our knowledge concerning the epidemiology of cholera is noticeably more complete and satisfactory than in the case of typhoid. A large revolving atlas is the centerpiece of this department, and on it are traced the courses of the five great cholera epidemics of the century, all of which had their point of departure in India, except that of 1883, which originated in Egypt. The rôle of water as the chief mediator in cholera epidemics is illustrated by maps of the Hamburg epidemic of 1892, and of the epidemic of 1850 in Barth; those parts of the cities supplied by uncontaminated water seem to be protected as though by an impassable barrier from the

invasion of the disease. Hamburg and Budapest, both of which cities have had sad experience with cholera, furnish certain new and interesting data regarding mortality and distribution. The mortality is generally as high as 50 per cent., the disease proving most fatal to infants of one year, after which age the curve gradually falls to the minimum, at ten years, and rises again after twenty years. Most subject to the disease are hired girls and day laborers, presumably because in these professions the chances of water infection are multiplied.

The next room is devoted to puerperal fever and to the various skin diseases. The mortality from puerperal fever fell rapidly in the cities about 1870, and now ranges between 0.5 and 1 per cent.; in the country districts it has fallen very much more gradually, and is still as high as 2 per cent. All the infectious skin diseases, including the rarest forms, are illustrated by very fine casts. Prof. Pick, of Prague, contributes cultures on various media and at successive stages of growth, of *Microsporon furfur, Microphyton tonsurans,* and other micro-organisms.

Following upon this, one enters a room devoted to malaria and to smallpox. One of the triumphs of the exposition is the masterly demonstration of the tremendous protective value of vaccination. The mortality of the Prussian army, which was subjected to vaccination from the year 1834 on, whereas vaccination was made obligatory for the civil population only forty years later, is in itself a demonstration. From 1825 to 1834, the mortality per 10,000 men, was 1 to 8; 1835 to 1870, 0-1; 1871, 2½; 1872, 3, the temporary increase being traceable to the severe epidemic then raging among the civil population; 1876-1897, 0 (except 1885, ⅓); during the same period, the mortality among the civil population was enormously greater: 1847 to 1870, 2 to 6; 1870, 24; 1871, 26; 1873, 4; 1874, 1, and since that time less than 1. The cities of Hamburg, Prague, Vienna, Dresden and Berlin present similar statistics. Comparison of the mortality in the various countries of Europe shows how favored are those with compulsory vaccination. In Germany, Sweden, and Denmark, the mortality never comes near 100 per 1,000,000 inhabitants; in France it is 150, Italy 210, Spain 640, Russia 840. The smallpox epidemic in Chemnitz of 1870-71 affords another unanswerable argument which is sufficient to shatter all the antivaccination leagues in existence. Eighty-nine per cent. of the population were vaccinated, 9 per cent. had previously had the pox; of these, 1 per cent. caught the disease, and of those infected less than 1 per cent. died; of the unvaccinated, 9 per cent. perished. Very instructive are 12 Petri plates, showing the richness of glycerin-vaccine in bacteria, at successive periods. The plates of the first day are remarkably rich in germs, but the vaccine, owing to the presence of bactericidal elements, gradually purifies itself, a process which is evidenced by the progressive diminution of the number of colonies in the plates. At the end of two weeks, only about 10 per cent. of the original number of colonies remains. After a month, the lymph is almost sterile, the pathogenic forms have all died off, and only a few harmless sarcinæ and yeasts remain. Yet the protective value of the vaccine is in nowise impaired after one month. The methods of securing lymph, instrument sets, casts, historical documents and plates, lend extraordinary interest to this collection.

The pathology of malaria is illustrated by microphotographs of the life stages of the plasmodium as seen in Romanowsky's preparations, contributed by Prof. Ruge, of Kiel. Italy contributes an exhibit of the material used to guard against the bites of *Anopheles*—gloves, helmets with a gauze curtain for the face, and so forth. There is a small model house, in which every opening, even the chimney, is protected by a fine wire screen. The efficacy of these measures is borne out by very careful tables compiled by the Italian Grassi, in which the comparative immunity of individuals in protected houses is in marked contrast to the deplorable condition of their unenlightened neighbors. These facts are the more interesting, inasmuch as the Italians regard the American idea, of exterminating the mosquito by abolishing marsh lands as chimerical. At all events, they have demonstrated that with their methods malaria is distinctly an avoidable disease even in the Italian Campagna.

Lepra and the Plague are very profusely illustrated by casts, pathological specimens, plates, bacteriological preparations, and historic documents.

Finally comes the section devoted to venereal diseases. Here the material is so rich that it is impossible to give more than a glance at the most interesting features. It appears that gonorrhea is the most frequent of the venereal diseases, and preponderates in the male sex; syphilis, on the other hand, preponderates in women up to the age of forty years. The distribution is as follows: Prostitutes are in the majority, and of this class especially the unlicensed; a close second are the students. It is remarkable, and a tribute to the efficacy of the medical inspection exercised over the brothels frequented by the military, that the soldiers in Germany contribute a *smaller* quota than any other class of the population. By far the largest percentage of cases occurs in the large towns, especially Berlin, the small towns are comparatively free, while the country districts are almost immune.

The reader may now consider that he has traversed most of the alcoves of the building; but he would greatly err, if he thought that he had almost finished with the exposition. There still remain the microscopical and bacteriological exhibits, and the contributions of the great public and private serum institutes of Europe. Finally, one large room is devoted to the subject of disinfection. The great central hall is occupied almost entirely by row upon row of microscopes, furnished by Leitz, under each of which is some interesting preparation. Ruge, of Kiel, contributes a full series of malarial preparations, including the cysts in the stomach wall of the mosquito. All of the skin parasites are represented in a series from Prague. All of the pathogenic micro-organisms, and many interesting pathological specimens find their place in this extraordinary collection. The Pasteur Institute has made an effort which entitles it to a special alcove. Binot, the chief, gave his personal attention to the preparation of this exhibit, and has sent a superb collection of bacterial cultures, killed by formalin, so as to preserve them in their typical condition. The cultures which are presented either in specially constructed (Roux) flasks, or in test tubes, are in excellent condition, and include every form of even distant interest to the physician. Very fine is the collection of potato cultures, with the characteristic discolorations produced. Among the other preparations from the Institute is a rabbit, with the cord prepared, for the securing of antirabic vaccine.

Finally, one cannot forbear to mention the very interesting collection of historical documents, of medals and plates, of proclamations regarding the infectious diseases, of reproductions of the contributions of art which bear upon disease, most of which come from Nuremberg or Paris.

All in all, although it has been possible to indicate only in broad outlines, the general trend of the exposition, its importance as an element in the popularization of the results of modern science cannot but be mani-

fest. The scope of its direct influence may be measured by the fact that no fewer than 100,000 individuals have visited it. How many more it indirectly and distantly enlightens no man can estimate. And enlightenment of the laity is the greatest boon which can come to the medical profession, just as it will prove the severest blow to the charlatans.

ELASTIC LIGATURE IN INTESTINAL ANASTOMOSIS.

To the Editor of the Medical News:

Dear Sir: My attention has been called to Dr. Maury's article on the elastic ligature in intestinal anastomosis. I wish to take notice of one or two points.

The bands of mucous membrane which were found in some of his specimens were due to a fault in technic. I myself found the same condition in my first case of operation on the human subject. The anastomosis in that case was made, according to Lücke's advice, with the coil of intestine first presenting. This chanced to be within three feet of the ileocecal valve and the patient died on the fifteenth day of starvation.

The anastomosis was found to be perfect, except that a narrow bridge of mucous membrane crossed the orifice on the gastric side. The explanation is simple: The folds of mucous membrane rise in ridges, and if the needle is passed in too horizontally these ridges will be perforated and strips of the mucous membrane will be left outside of the ligature. This accident may be avoided by care in passing the needle. It should be entered at a right angle to the long axis of the gut and made to traverse its cavity without transfixing the mucous membrane. In actual practice, as tested now in many cases by many surgeons, the simple method which I described in my first article is entirely successful in accomplishing its purpose and is to be preferred to any more complex procedures.

The proposal of Dr. Maury to substitute a ligature of heavy iodized gut for the rubber would be, in my opinion, disastrous, as the constant unremitting elastic contraction of the rubber cord on the tissues is the essential element in securing their certain absorption.

Theodore A. McGraw, M.D.

OUR VIENNA LETTER.

(From Our Special Correspondent.)

Vienna, Sept. 10.

MEMORIAL EXERCISES OF PROF. KARL GUSSENBAUER—DR. HERMANN KAPOSI'S NEW WORK—DEATH OF DR. JOSEPH MAYDL—EXPOSITION OF INTERNATIONAL HEALTH RESORTS—INSTRUMENT FOR DETECTING ADULTERATED MILK.

Prof. Baron v. Eiselsberg was commissioned by the Academic Senate to deliver the memorial address over the deceased Rector of the Vienna University, Prof. Karl Gussenhauer. He outlined the professor's life, in part, as follows:

Born in 1842, the second son of a village physician (Landchirurg), in Ober Vellach; acquired an elementary and collegiate education in Klagenfurt. Being of modest means, the young student was thrown on his own resources. In 1861 he entered the Vienna University. Despite his straitened circumstances he frequented the lectures of Hyrtl, Brücke, Rokitansky, Skoda, Oppolzer, and other learned professors. In 1867 he had earned his diploma of M.D. Soon after Prof. Brücke appointed young Gussenbauer in his physiological laboratory, where he occupied himself with researches regarding the musculature of the heart valves. Finally he drifted into the Surgical Clinic as a junior. After a year he was examined in practical surgery. Prof. Billroth presided at this examination, and was so enchanted by the exactness of the solution committed to the student's task that he appointed him as one of his assistants. Thus young Gussenbauer rose step by step by earnest endeavor. In the spring of 1875 he was appointed to fill the chair of Professor of Surgery in the Luttich University, through the influence of Prof. Billroth. In 1886 he became rector of the Prague University; in 1894 he became the successor of his master, Billroth. Two years ago Gussenbauer was elected President of the Wiener Aertze Society, also Rector Magnificus of the Vienna University. Dr. Gussenbauer had an apoplectic stroke on June 19, and succumbed the same day. His scientific attainments are known throughout the world. As an operator he had no peer, and his pupils are scattered throughout the world.

Dr. Hermann Kaposi's new work, "Surgery of Emergencies" is out, and deals abundantly in such cases. It has not been well received owing to the lack of illustrations and its superabundance of diagnosis, pathology, etc., not strictly bearing on the matter at issue.

Prof. Joseph Maydl, Director of the Surgical Clinic at Prague University, died early in August.

The Exposition of International Health Resorts will be held in the Palace of the Hungarian Ministry some time this month. All the prominent health resorts of the Continent will be represented.

The Hungarian Society of Inventors is offering a prize for the invention of an instrument by which every housewife can detect whether her milk has been adulterated or not. The selling price of this instrument must not exceed twenty cents. The amount of the prize is $150, and the closing day of the competition is November 1. Full information for competitors may be had of Dr. Adolf Erdös, Sarajevo, Austro-Hungary.

SOCIETY PROCEEDINGS.

THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Semi-annual Meeting, held in the Academy of Medicine, New York City, October 13 and 14, 1903.

(Continued from Page 761.)

SECOND DAY—WEDNESDAY, OCTOBER 14, 1903.

New York Hospital for Incipient Tuberculosis.—Dr. Willis G. Macdonald, of Albany, read a paper describing the plans of the New York State Hospital for the treatment of incipient tuberculosis, at present being erected at Raybrook in the Adirondacks. The hospital is 1,039 feet above sea level with a southeasterly exposure, one of its porticos being so situated that by a survey it will have sunlight from 8.30 A.M., until 4:30 P.M. on the shortest day of the year. The appropriation allows of the completion of a hospital that will accommodate 168 patients. During convalescence, however, patients will be allowed to live in tents and their meals can be furnished by the Sanitarium, so that practically there are accommodations for about 160 patients. At first the expense will be about $1,900 per patient. With the later accommodations this will be reduced to about $1,000 per patient. Arrangements are such that when patients are first admitted they are kept in single rooms with 1,800 cubic feet of air space for each patient until the active signs of the disease disappear. After this they are placed in dormitories accommodating three patients with 1,400 cubic feet of air space for each. The housing of the patients has cost less than one-half as much as the Adirondack cot-

tage sanitarium and the economy has been secured by concentration, yet without objectionable limitation of space.

Technic of Operations on the Tongue.—Dr. Dawbarn, of New York City, said that for removal of cancer of the tongue the only proper surgical procedure is the removal of the tongue below the jaw. There is a lymphatic gland at the bifurcation of the carotids, which is usually enlarged and which should be removed. While doing this the surgeon may tie the superficial carotid and save great loss of blood. Many of these cases die from shock and if the meaning of shock be analyzed one of its main elements will be found to be hemorrhage. It is better to tie the superficial carotid artery than to tie the lingual, and there is no danger of secondary hemorrhage. It used to be supposed that the closeness of the branches of this artery prevented the formation of internal clot and so hampered closure of the artery with consequent danger of secondary hemorrhage, but this is now known not to be true.

Septic Pneumonia.—The most important cause of death after operations for the removal of the tongue is septic pneumonia. Usually patients are advised to sit up as soon after the operation as possible. This advice is criminally foolish. The stump of the tongue left is unable properly to control the epiglottis so as to cover the larynx when swallowing, and to have patients sit up is to make it almost inevitable that septic material shall enter the air passages. Dr. Dawbarn prefers to do the operation in a moderate Trendelenburg position. No pillows should be allowed under the head after the operation, and bricks or books should be placed under the feet of the bed. Rectal feeding and the rubbing of warm oil into the skin should be the principal methods of giving nutrition. This protective posture should be maintained for several weeks until the stump of the tongue is clean and the saliva is sweet. Dr. Dawbarn has seen cases in which, even after three weeks, a patient's impatience to sit up has been followed by septic pneumonia, with rise of pulse, of temperature, with distinct rigors, though without much cough. These cases are nearly always fatal.

Hypoglossal Nerve.—Dr. Dawbarn always inserts the hypoglossal nerve, which is readily to be found in Lesser's triangle, into the tongue, in order to encourage the movements of the tongue. This has apparently given better movement, though, of course, it is doubtful whether a motor nerve can be inserted into a muscle and communicate any nervous impulses to the muscle fibers.

Packing and Aristol.—Dr. Dawbarn prefers not to pack the gauze, for this soaks up the discharges rapidly and keeps them present in the mouth, with constant danger to the respiratory passages. The cut edges of the tongue are rubbed with aristol in order to produce an albuminate which will not readily allow the penetration of septic material. A fountain syringe is kept near the patient, who is instructed hourly to use some of the solution of permanganate of potash, which it contains, in order to destroy the fetor. The patient must be warned about keeping his head low while douching the mouth.

Palliative or Radical.—Dr. Dawbarn considers that operations upon the tongue are not merely palliative when done for malignant disease, but are really radical cures in many cases. When the malignant disease is limited to the tongue itself, the outlook is always very hopeful, and with the modern improved technic a permanent cure can be expected in at least one-half of the cases. Now that the well-known power of the X-rays, to influence recurrences of carcinoma, are available after operation it seems not too much to hope that most of these cases will in the very near future be saved from the lingering, awful death to which they were inevitably subject heretofore.

Care of Teeth.—Dr. Bristow, of Brooklyn, said that the most important preliminary for operations upon the tongue is careful cleansing of the teeth. In all cases where he expects to remove the tongue, patients are instructed to use a tooth brush every two hours themselves while the nurse faithfully washes out the mouth twice a day. The well-known unpleasant condition which exists in all cases of cancer within the mouth is thus modified very favorably, and Dr. Bristow is sure that he has better results as a consequence in his practice. Of course, all decayed teeth are removed. Dr. Bristow considers that the posture after operation, suggested by Dr. Dawbarn, has many theoretical advantages, and he intends to make a trial of it. With regard to preliminary tracheotomy, while in principle it seems wrong, since it removes the natural filter of air for the respiratory passages, in these cases, in Dr. Bristow's opinion, it is often indicated. The tracheotomy tube is kept covered with a piece of sterile gauze, on which occasionally some glycerine is dropped in order to keep the air that enters the lungs from being too dry.

Dr. Vander Veer, of Albany, said that the tying of the external carotid seems to him an excellent precaution. Loss of blood is important in two classes of subjects—infants and old people. Old people especially come for these operations and in their cachexia they can afford to lose very little blood.

Dr. Willis Macdonald, of Albany, said that the tying of the external carotid is much easier, even for the novice, than the tying of the lingual, which is usually recommended. Dr. Macdonald considers, however, that the sitting posture after operation is the more favorable, as it enables the patient to get rid of secretions. If he should operate to-day he would have his patient sitting up to-morrow, and have him in a half-sitting posture during the afternoon. He prefers to use the galvanocautery in removing the tongue, not because it prevents hemorrhage, but because the cooked eschar produced protects the surfaces from septic invasion until the granulations throw the burnt portions off. The use of the galvanocaustic knife Dr. Macdonald has learned from Dr. Kocher.

Dr. Gallant said that the most radical operation is the best in cancer of the tongue. Hemorrhage is not so much to be feared as the dangers of careless anesthesia.

Dr. Dawbarn, in closing the discussion, said that his only idea is to have other surgeons try his suggestion as to position after the operation, since he has found it so useful. He does not believe in the use of a galvanocautery, because the eschar produced causes healing to be very slow. He suggests the rubbing in of aristol for the same purpose, however, and the application of this material produces an insoluble albuminate not easily penetrated by microbes. The use of aristol in this way is of special benefit wherever tissues are sure to become infected, or, at least, to be placed in contact with infectious material. When operating upon the appendix, just before opening the abscess cavity, the tissues should be rubbed with this powder and in suprapubic cystotomy the same practice forms an excellent rule. In tracheotomy during diphtheria, just before the trachea is opened, the cut surfaces of the wound, if rubbed with aristol, will usually be protected from many of the complications that are so frequently a source of inconvenience to surgeons during the course of these cases.

Potable Waters.—Dr. E. S. Willard, of Watertown, N. Y., said that the problem of supplying the people with potable waters grows more difficult as the

population increases. This is true for surface as well as deep water. The old idea that water could be purified by rapid flow, aeration and sedimentation was valuable when sources of contamination were few, but this is now inadequate for the protection of water. Dr. Willard suggested that for small towns in the midst of crowded rural population it may be necessary to revert to distillation in order to secure pure water. After all it has been shown that water may be distilled at a cost of about one-eighth cent per gallon. For public water supply, filtration constitutes the best solution of the difficulty. There are two methods, the English slow filtration through sand and the American more rapid filtration with mechanical adjuvants. For this a coagulant is necessary, and there is question always of the bad effect of alum on the system, but no more of this material need be used than can be decomposed by the carbonates in the water, when none of the alum need leave the filtration bed. The ultimate solution of the problem must consist in legislation against the pollution of water supplies by sewage, and besides the material thrown away by the present system is too valuable as fertilizer for conditions to be continued.

Albany Experiences.—Dr. Frederick C. Curtis told the story of slow sand filtration in Albany, which had produced a lower death-rate in the very month of its installation. Since the water has been filtered through sand the death-rate from typhoid fever has never been more than one-half as high as it was before. At least 50 lives per year are saved, so that at the ordinary value of $5,000 per life, as suggested by Dr. Willard, the filtration plant pays for itself every year. There is no stronger evidence of what can be done for the improvement of public water suppy than this Albany experience.

Conservatism in Gynecology.—Dr. John O. Polack, of Brooklyn, gave some details of methods by which, even in the midst of infectious processes, organs can be saved for diseased women. Conservation and not ablation is the principal duty of the gynecologist. This is especially true in the treatment of acute infections, and it is not always necessary to wait for nature to bring about amelioration of conditions before surgical assistance can be rendered. In acute endometritis, curettement followed by the insertion of a 30-grain pencil of iodoform is usually followed by an abscess of complications in the adnexa that constitutes a distinct advance over former methods of treatment in streptococcus infections of the peritoneal cavity. Dry iodoform gauze is packed into the posterior cul-de-sac and allowed to remain for four days. It can be removed painlessly by douching with 50 per cent. hydrogen peroxide solution, the patient being in the Sims position. As little manipulation as possible should be done, as anything that disturbs the lymph thrown out by nature is sure to lead to absorption of infectious material.

Dosage of Digitalis.—Dr. Abraham Jacobi, of New York, mentioned some observations on the desiccation of digitalis leaves in vacuo. After a year 50 per cent. of the active principles in the digitalis have disappeared, though the leaves look green and fresh, retaining all their chlorophyl. Hence the advisability of the suggestion that powdered digitalis should be compressed with milk sugar purer than that ordinarily obtainable, or with starch, and the tablets thus made coated with some varnish that will exclude oxygen. The leaves themselves, however, contain oxygen and this brings about deterioration of the active principles. Every time that the jar is opened in which digitalis is contained a renewed supply of oxygen is obtained. Hence the results of the German observer, who, in six different samples of digitalis found a variation in strength of from one to three. Tinctures varied in strength from one to four, but tinctures of strophanthus were still more variable, varying from one to sixty. It is easy to see under these conditions how a tablespoonful of one preparation may not prove so effective as a teaspoonful of another.

Uniformity of Material.—No preparation of digitalis, even that made in a hospital, can be depended upon absolutely, but only comparatively. It is advisable to make preparations from English digitalis leaves, which are the best immediately after they have been gathered. With regard to the use of digitalis, a knowledge of the preparation is of the first importance. The doses of the drug employed by Dr. Jacobi are small, medium and large. In old age, with hard arteries, small doses modified by the nitrites are employed. An irregular heart, with frequent missed beats, is an indication to stop the use of digitalis. In young persons with acute dilatation indicated by small pulse, cyanosis and an enlarged right heart, demonstrable by percussion to the right of the sternum, teaspoonful doses of the tincture of digitalis, repeated several times at two or three hours' interval, may be employed. In weak hearts, four to five grains of the powdered digitalis may be administered for weeks and months without cumulative effect. To secure any satisfaction, digitalis must be administered up to the obtaining of its physiological effect.

Dispensary Treatment of Tuberculosis.—Dr. John Winters Brannan, of New York, discussed the arrangements now completed for the treatment of New York's poor under the direction of the city dispensaries. This is not the dispensary, but the home treatment of tuberculosis. The dispensaries are for diagnosis and for instruction of the patient. The instructions consist particularly on the danger of contagion, the necessity for fresh air, open windows, life out of doors, on the roof, on the fire-escapes, in the tenement-house districts and in the parks. A trained nurse is to visit the homes of the patients, note their social, sanitary and financial conditions, see to the enforcement of sanitary regulations and make weekly reports. Where nutritious materials for diet are not at hand, these are to be provided through some of the charity organizations. Four quarts of milk and 12 to 15 eggs are considered to be the basis for elementary treatment. Besides, there is to be a provision for the treatment of fever cases, and this is an advantage which the city dispensaries will have over other dispensaries, such as Dr. Otis', in Boston, or the Vanderbilt Clinic in New York, who have taken up this same work. Physicians to succeed in this branch of medicine must have enthusiasm for the work. Dr. Brannan has found Dr. Miller to place in charge of the Bellevue department of this work, but as yet he has been unable to find men for the other hospital clinics. There will be opportunity to treat thousands of cases, where the State Sanitarium will be able to have its influence only on hundreds at most.

Home Treatment of Consumption.—Dr. Miller, who organized the home treatment of tuberculosis at the Vanderbilt Clinic, said that France first developed the subject of the possibilities of successfully treating the outdoor poor for tuberculosis. Otis, in Boston, took the work up in this country of its wonderful usefulness. Of 160 cases treated 49 are now at work, 56 are at home, 23 were sent to the country, 22 are in the hospitals, and 15 are dead. Ninety per cent. of these cases were advanced types of tuberculosis. Yet 51 per cent. of them were improved, that is, gained in weight and felt subjectively better. As a matter of fact, almost as good results can be obtained with

proper care in New York City as in sanitaria in the country.

Symposium on Typhoid Fever.—This constituted the scientific business of the afternoon session of the second day.

Present Views as to Typhoid.—Dr. H. A. Fairbairn, of Brooklyn, discussed the gradual modification of medical ideas as to typhoid fever, until the present medical opinion has come to obtain. It is now recognized as a constitutional disease likely to have local manifestations in the intestines, but not necessarily associated with these, and prone to have other manifestations dependent on a specific bacillus, of which several cognate bacilli produce strikingly similar affections.

Anomalies of Typhoid Fever.—Dr. H. L. Elsner, of Syracuse, N. Y., discussed the anomalies and difficulties of diagnosis in typhoid fever and insisted on how much facility and assurance of diagnosis had been secured by the use of the Widal reaction. There is much less gastric fever in Central New York now than there used to be, and when patients suffer from acute gastric symptoms followed by jaundice, with a continued fever, the Widal reaction usually reveals, on the eight or ninth day, the true diagnosis. Besides the Widal reaction, culture methods are very informing, and are especially helpful in differentiating typhoid from paratyphoid fever.

Dr. Elsner has investigated the character of his typhoid fever cases with regard to the number of spots, and has found that there was no relation between the severity of the fever and the number of spots, while hemorrhages are only supposed to occur rather late in the disease. Dr. Elsner has recently seen a severe hemorrhage on the eleventh day of continuous symptoms, and has even seen death take place from hemorrhage on the ninth day. Of course it may be said that these were walking cases for some time before coming under observation, but the fact remains that the danger from hemorrhage is not precluded during the first two weeks. Abdominal conditions in typhoid are often extremely puzzling. All the symptoms of perforation may occur, yet no perforation may really have taken place. These symptoms then mean a localized peritonitis produced by septic material finding its way through the floor of a deep ulcer.

Effacement of Liver Dulness.—The old diagnostic rule that perforation was to be suspected, or even actually considered to exist whenever there was an effacement of liver dulness is not an absolute diagnostic sign. In cases of severe tympanitis, hepatic dulness may be absent without perforation. The best rule is to turn the patient on the side and percuss in the axillary line from the eighth rib downward. Under these circumstances, if liver dulness is absent, it is not because of a collection of gas in the transverse colon, and the sign has much more significance. Blood-pressure changes seem to be the most important discussed in this regard in recent years. Surgeons know that shock produced by irritation of the peritoneum gives a sudden rise of blood-pressure. In cases of typhoid fever studied with regard to blood-pressure, by means of the Riva-Rocci instrument, this phenomenon of the sudden rise of blood-pressure has been noted.

Posttyphoidal Infection.—It must not be forgotten that the typhoid bacilli may lodge in a particular part and after convalescence produce a septic condition in it. This is especially true of the bile passages, but other infections, as of the marrow of the bones, may take place. A trying diagnostic difficulty is the condition of the urine when there is albuminuria and the physician is not sure as to the typhoid fever or to a preceding chronic nephritis. Where a diffuse chronic parenchymatous nephritis has existed before the typhoid occurred, there is high blood-pressure. Typhoid nephritis itself is followed by lowered blood pressure. Malignant endocarditis occurring during typhoid is extremely difficult to recognize. It may occur, however, from the typhoid bacilli without any other agent. Fortunately there is a rarity of endocarditis in typhoid fever, and few heart lesions can be traced directly to the disease.

Infantile Typhoid.—This is more frequent than has been thought, and its diagnosis is often missed, because physicians do not look for it. Typhoid fever may occur in very young children, even when other members of the family are not affected. The disease is not necessarily severe in children, and Dr. Elsner has seen two cases in which only one rose spot was noted. Diagnosis depends on the Widal reaction, which should always be taken whenever there is a continued fever for which no good reason can be found. Intermittent forms of typhoid fever, of the kind described by Murchison, sometimes occur in children. They were extremely difficult to differentiate from malaria until the introduction of the Widal test. Quinine constituted the test before this. Such conditions as beginning tuberculous meningitis, generalized tuberculosis, and simpler gastro-enteric affections may be difficult of differentiation from typhoid. The presence of leucocytosis usually argues against the existence of typhoid. If there is no enlargement of the spleen, as a rule, some other affection is at work.

Management of Typhoid Fever.—Dr. Egbert LeFevre, of New York, discussed the management of typhoid fever, according to our present knowledge of the disease. It is usually forgotten that the bowel lesion is no longer considered to be the underlying basis of typhoid fever. The old fear of alimentation producing serious reaction in the intestine is based on this old-time conception. The present infections need feeding, yet typhoid fever patients are usually starved. The indication in typhoid is for a liquid, easily digestible, diet, which is readily absorbed and leaves no solid material to reach the ileocecal region. The food materials should be such as do not readily ferment and do not cause nausea. Milk is not quite a perfect food, and though administered as liquid, it is immediately coagulated in the stomach into more or less hard lumps, which, especially during typhoid fever, are not broken up before they reach the colon. Anyone who examines the stools of typhoid fever patients fed exclusively on milk will soon realize that a considerable amount of hard material reaches the large intestine in these cases. As a matter of fact a mixed diet will not give a greater amount of such residue. Anyone who takes three pints of milk in the day for himself and notes the uncomfortable distention that follows, will not consider it suitable for typhoid fever patients.

Necessary Food Material.—Professor Munk, the distinguished physiologist of Germany, estimated that at least six pints of milk are necessary to supply the proteids indispensable for maintaining health. Eight pints of milk are necessary to supply the other material necessary for metabolism. Patients cannot take this much and consequently there is a loss of strength and a falling off of vital resistance, which allows relapses to occur. So-called posttyphoid sepsis, is usually really starvation due to the maintenance of an exclusively milk diet. English army surgeons studying the question of the occurrence of thrombosis in typhoid fever, found that the coagulability of typhoid fever is greatly increased during the beginning of the first week and greatly diminished toward the end. This increase of coagulability which predisposes to thrombosis is due to the calcium salts absorbed from the milk and this unfortunate tendency is increased by the addition of lime

water to the milk in order to make it less liable to produce tympanites.

Diet in Typhoid.—Nothing should be given except what may pass through a fine wire sieve. An abundant supply of water should be allowed to the patient and the physician should see for himself that it is taken. At times carbonic water may be employed, the excess of gas being allowed to escape. Acidulated waters are sometimes grateful, but plain water is best. Of milk two or three pints a day should be given, flavored with coffee or cocoa, or tea as the patient wishes. Milk that has been aerated by being shaken up is more tasty and more digestible. Occasionally it may be taken in the form of junket, or may be mixed with stale grated bread, or with such of the farinaceous baby-foods as are grateful to the patient. Oatmeal, rice, wheat, sago and other cereals make a good variety in the diet, and the old prejudice as to their causing fermentation has now disappeared. As a matter of fact, in such a mixed diet there is less distention than when pure milk alone is used.

Use of Gelatine.—The value of gelatine is underestimated. It lessens nitrogenous waste and protects the proteids of the body. In the form of jelly it is very palatable. Cold jelly bouillon is very grateful to patients. Gelatine should be used whenever there is danger of hemorrhage. A half ounce to an ounce of gelatine should be administered every couple of hours when hemorrhage threatens and it will control bleeding better than ergot or the astringents.

Catharsis.—It is important to remove the residue as well as not to permit the ingestion of irritating materials. The ordinary cathartics are apt to act as disinfectants also. The most important materials in this regard are salines and castor oil. In children olive oil may be employed. Salines may be used in a variety of preparations. Phosphate of soda, or magnesium sulphate, or, if the patients have been accustomed to saline waters, these may be continued, as it is easier to regulate the dosage. Castor oil should be given in elastic capsules. If they have a tendency to produce griping, three to four drops of chloroform should be added. As an antifermentative five grains of salicylic acid may be added to the castor oil.

Antipyretics.—Cold bathing is important, but if patient is very sensitive to the cold the temperature may be gradually reduced, the patient being put in when the water is quite warm. The prejudice against the coal-tar antipyretics came from the abuse of them on their first introduction. Every physician of experience in typhoid realizes their value now in helping to control the temperature. Quinine acts as an antipyretic, not by affecting the heat regulating apparatus, but by lessening proteid metabolism. It should be given in the massive doses, 30 to 40 grains, but after an initial dose of 15 grains, five to 10 grains are sufficient. Quinine is especially useful in posttyphoidal sepsis.

The Ithaca Epidemic.—Dr. L. Colville, of Ithaca, N. Y., gave the details of the epidemic of typhoid fever at Ithaca, N. Y., at the beginning of the present year. So far it has not been definitely determined just what was the source of the infection. Along Six-mile Creek, the source of the city water supply, there are two towns and farms, the water-closets of which are not very far from the stream. Besides this, not far from the pumping station an Italian colony of laborers was camped along the bank of some small streams that empty into the water supply. Some of these sources are supposed to be accountable for the epidemic.

Anomalies of the Disease.—All of the cases had the throatmarks of typhoid fever, the dull angry pharynx with the pillars of the fauces and tonsils involved. The usual intestinal condition was constipation. There were many respiratory complications, but this seems to have been due to overcrowding. The death-rate was rather high, especially among the students. Among the students 131 cases occurred in the city, and 197 out of the city. Altogether 30 of them died, a mortality of 9.1 per cent. Of the townspeople, 42 died, constituting 6.6 per cent. mortality. In the city hospital the mortality was less than 7 per cent. The average date of death was the twentieth day. A curious element of the statistics was the fact that no plumber or sewer employee suffered from typhoid fever.

Water Source of the Disease.—Of all those who drank other than city water no one contracted the disease. City water was used for cleansing and bathing purposes, but this did not give rise to any cases of the disease. The milk supply did not become infected at any time. A very interesting fact was the immunity of physicians and nurses to the disease. One physician acquired typhoid fever and unfortunately died from it.

Lessons of the Epidemic.—Dr. George A. Soper, of the State Department of Health, said that the State Board of Health had not yet determined the source of the epidemic. The Widal test was made on the blood of every person known to have been ill for six months before the epidemic, yet without definite information. The town had ample notice of the danger. One hundred privies were known to exist along Six-mile Creek and 17 privies were contaminating the water supply in the town. Not much could be done by the local Board of Health and 1,000 cases had occurred before the State Health Commissioner was called upon. Then it was found that physicians were not reporting their cases promptly. The principal lessons of the epidemic are that the local Board of Health should have more power than is now the custom and should exercise it It is strange to find such an epidemic in a University town, but it must not be forgotten that at the universities no courses in practical hygiene are given and sanitary science is not taught. There is need of change in this matter and the introduction of such courses will gradually bring the public to the proper realization of the dangers run and the precautions necessary in times of typhoid fever.

Epidemiology of Typhoid Fever.—Dr. Cyrus W. Field, 2d, of New York, said that the impression gaining ground at present in bacteriology is that typhoid bacilli cling to life much more tenaciously than has been thought heretofore. At Chickamauga, living typhoid bacilli were found in the camp water-closets two years after the soldiers had evacuated the encampment. Typhoid bacilli have been known to live in soil for sixty-five days and a recent observer has even found them alive twenty-five days after being ground into dust and subjected to drying in the air. Needless to say if typhoid fever bacilli get into food materials they grow very rapidly. This is especially true as regards milk.

Shellfish and Typhoid.—Typhoid bacilli have recently been found to grow very rapidly in oysters and other shellfish whenever the resistive vitality of the fish is much lowered. On the other hand, typhoid bacilli exposed to sea water with a specific gravity of 1,017 are killed in a few hours. Freezing does not destroy the bacilli, so that the preservation of shellfish on ice is no absolute protection. It must not be forgotten that ice-cream is a carrier of infection for typhoid fever, notwithstanding the freezing process. Long-continued existence in a frozen state seems to deprive the bacilli of life.

Dr. Heffron, of Syracuse, in discussing typhoid fever, said that the epidemic of Ithaca, though one hesitates to say it, may prove a blessing. Watersheds must be patrolled and the sources of water supplies, such as lakes and rivers, preserved from pollution. If every

case of typhoid were traced to its origin in a few years there would be no typhoid fever left. Dr. Heffron, after having had an experience personally with typhoid, is opposed to the everlasting milk diet. He has had excellent results with acetozone as an intestinal disinfectant.

Dr. Abraham Jacobi said that it must not be forgotten that the urine of typhoid fever patients remains infected for many weeks after convalescence has set in. During this time nephritis may occur unless great care is taken.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Twenty-ninth Annual Meeting, held at Memphis, Tenn., Oct. 7, 8 and 9, 1903.

The President, Dr. Edwin Walker, of Evansville, Ind., in the Chair.

President's Address.—The President urged the necessity of careful, accurate observation in the study of cases, and the correct diagnosis of each one as an indispensable requisite to advancement in the profession. Experience was valuable in proportion as it was founded on accurate observation. The practitioner must fit his methods to his needs. When remote from large centers he must evolve his own system. If his practice is large, an assistant or competent nurse should be obtained. It was his belief that in the near future the trained nurse would become a clinical assistant, relieving the busy doctor of many details, such as testing urine, stomach contents, and other minor manipulations. Physicians learned to save time and to apply it to the essentials, leaving the details to others.

The Decision to Operate.—Dr. A. M. Cartledge, of Louisville, Ky., in the Address in Surgery, impressed upon both physicians and surgeons the eternal fitness of time and opportunity as they related to surgical operations. The first great responsibility in deciding that an operation should be performed rested with the physician, who was keenly alive to the alarm and perturbation his announcement would cause to both patient and friends. Therefore, he should be prepared to make such announcement with the greatest clearness and candor, mingled with as much encouragement and hope as the condition would justify. He sounded a note of warning against the too common practice of treating surgical operations as trivial affairs, free from danger and pain. He called especial attention to the decision to operate in affections confronting the physician almost daily, and to the significance of time and opportunity. In cancer of the uterus, if seen early, the surgeon should advise complete removal of the organ at once, yet promise very little as to return of the disease, for there was no chapter in the history of malignant disease as gloomy as this. Cancer of the breast is more hopeful, but hopeless enough. In cancer of the maxillary bones he believed it was sound practice to advise operation in almost every case affecting the lower jaw, and to refuse operation in almost very case involving the superior maxilla. Next to the uterus, he did not know of a situation in the body where malignant disease was surer to return after operation than the superior maxilla. He was convinced that cancer of the alimentary canal was slower of growth and extension than was generally supposed, and that early operations promised much more than was usually accredited to them. Surgeons should be slow to decide upon operation in chronic brain troubles, such as suspected tumors. They should decide quickly upon operation in cases of compression and infections within the cranial cavity. Time was of more importance in acute peritoneal infections than in lesions elsewhere in the body. The happiest time to operate upon intestinal obstruction was when the physician suspected the patient had one of the organic forms of this condition.

Relation of the Medical Department of the United States Army to the Profession.—Major W. C. Borden, U. S. Army, Washington, D. C., delivered an address on this subject. He stated that in the past the relationship between the officers of the medical department of the army and the profession at large had always been close, and thereby the officers of the medical department had kept in touch with the great advances in medicine and surgery, which the civil practitioner in time of peace had the greatest opportunity to practice.

The Prevention of Heart Disease.—This was the subject of the address in Medicine delivered by Dr. Robert H. Babcock, of Chicago. The speaker discussed in what manner the principles of prevention could be applied to various heart affections. He regarded the removal of all chronically diseased tonsils as of the utmost importance in all persons who had had once an attack of inflammatory rheumatism, whether the heart had been damaged or not. If infection could be prevented, cardiac inflammation could likewise be obviated. This statement applied to other affections than rheumatism. He then mentioned syphilis and gonorrhea, saying that these diseases sometimes attacked the cardiac structures. Pneumonia, chorea, scarlatina, is sometimes accompanied or followed by acute or chronic endocardial mischief; while influenza or diphtheria might attack the myocardium in an inflammatory way, so as to seriously impair its integrity. Until we could prevent such infections, we could not guard against the cardiac structures being attacked. The author discussed chronic myocardial diseases, the toxic influence of syphilis, alcohol and chronic lead poisoning, fatty heart, and particularly cardiac overstrain, as it is observed in the young, and sometimes in the middle-aged, and apparently healthy, as the result of excessive physical exertion, and mentioned typical examples of this kind.

The Importance of Medical Organization in Securing and Enforcing Medical Laws.—Dr. T. J. Happel, of Trenton, Tenn., in discussing this subject, stated that when the American Medical Association had drawn into its folds the members of the medical profession who should legally belong to it, there would be no trouble to secure a department of public health, with an officer at its head as a member of the President's Cabinet; and reciprocity in medical licensure would no longer be an idle dream. Uniform medical laws could be passed in all the States of the Union, with only such variations as might be demanded by the Constitutions or laws of the different States; and then all the requirements could be made so nearly alike for license to practice medicine, and the examinations made upon such an equal basis, that a license issued in one State would be accepted in another without question.

Medical Organization.—Dr. J. N. MacCormack, of Bowling Green, Ky., made some remarks on this subject, and among other things he stated that it was only a question of time when every State medical society in the Union would adopt the plan of reorganization of the American Medical Association. The results thus far accomplished were very encouraging. Within the last two years progress had been very rapid in many of the States. For instance, in Michigan the membership of the State Medical Society within one or two years had increased from 400 to almost 2,100 members; in Kentucky from 300 and some odd up to nearly 1,600. A marked increase had been observed in the membership of other State medical societies. He urged physicians to establish pleasant relations with one another, and that if they were at present unpleasant, they

should now make them pleasant. With this idea in view every physician in the United States should begin to do good, and soon personal bickerings would be at an end.

Hypodermatic Use of Mercury in Syphilis.—Dr. S. P. Collings, of Hot Springs, Ark., said mercury was the only drug that was a specific in syphilis; that all others were adjuvants only, and included among the latter were the iodine compounds. Delay in arriving at what was probably the proper standing of the hypodermatic use of mercury in syphilis had been caused by the multiplicity of preparations of mercury that had been used, the methods employed in their administrations, and to the fact that there had been so many overzealous advocates claiming quick cures for the method, which had brought it into disrepute. The cases to be selected for the use of mercury should be largely those in which there was an existing necessity for the patient to be brought rapidly under the influence of it. The question as to its use as a routine treatment should be decided by the attending physician from time to time.

Specialism in Its Modern Significance.—Dr. Albert B. Hale, of Chicago, said that specialism had changed from its earlier condition where tradition sharply defined the work, because the surgeon, the obstetrician, or the internist recognized that no real dividing line separated their activities. The young man of to-day was so well educated by his college and even by his postgraduate work, that he was able to practice in many departments formerly exclusively held by specialists. But modern specialism meant time to devote to the delicate technic of diagnosis and of treatment. If these functions were not recognized for the patient's good, but if every practitioner accepted cases on which to practice, even when not equipped for it, the advance of true specialism was discouraged, and prevented the profession from attaining that culture which characterized our European colleagues.

The Early Diagnosis of Mental Diseases.—Dr. C. B. Burr, of Flint, Mich., defined insanity as "a prolonged departure from the individual's normal standard of thinking, feeling, and acting," saying that this would for working purposes be found sufficient. A comprehensive definition would include mental defect of whatever cause and mental perturbation of whatever degree. Any or all of the elemental processes of sensation, perception, ideation, reasoning, judgment, memory, may be impaired in insanity. In the paper the nature and degree of impairment of these elemental processes and of emotion and volition, in different forms of insanity, were touched upon. Subjects discussed at greater length were the distinction between confirmed inebriety and true insanity of alcoholic origin, the differential diagnosis of alcoholic pseudoparesis and paretic dementia, certain phases of hysteria, and the diagnostic difficulties pertaining to paranoia and recurrent mania. Neurasthenia was a euphemism often employed to obviate the necessity of plain speaking, or might be used erroneously to explain the symptoms in the early stages of an organic malady. The self-deception on the part of the physician or his inaccuracy in diagnosis led to improper methods of management, and the prescription of travel often made for such patients was deplored, and incidentally hospital care for neurasthenic cases was advised.

Therapeutic Value of Heat and Cold Applied to the Spinal Cord.—Dr. W. Frank Glenn, of Nashville, Tenn., in discussing this subject, drew the following conclusions: (1) Nothing should ever be put into the stomach except such substances as form a component structure of the body. (2) If this rule were rigidly adhered to, there should be no digestive disturbances, and all would have normal blood. (3) Since the blood was the life, when the blood had its structural elements normal and every cell was receiving its proper supply, no more, no less, disease could not exist. (4) Since it was known that the amount of blood in any part was controlled by the action of the vasomotor centers of the spinal cord, and the sympathetic gangha in close proximity to the cord, when these centers were performing their functions properly, the blood circulation must be normal and no disease could exist. (5) When there existed any disease causing an increase of blood in the capillaries of an organ, the application of heat over the vasomotor centers presiding over that organ caused almost at once a normal flow of blood in them, and consequently a normal circulation in the organ affected. (6) When there existed any disease which lessened the normal amount of blood in any organ, then the application of ice over the vasomotor centers presiding over that organ would cause a normal amount of blood to flow to that organ, resulting at once in a normal circulation and a consequent subsidence of the symptoms of the disease.

Brain-strain Dyspepsia.—Dr. C. H. Hughes, of St. Louis, called attention to conditions that were altogether too much overlooked in dyspepsia, as encountered among the brain-strain and brain-weary and worn men and women of affairs, connected with defective innervation in the stomach.

What a General Practitioner Should Do in the Early Stages of Mental Disease.—Dr. Brooks F. Beebe, of Cincinnati, said the practitioner should teach people that if they would live happy and useful lives, and produce healthy and happy progeny, they must not eat too much of the fruit that was sour. The great progress in recent years in the treatment of mental diseases was a result of the recognition that psychology rested alone on physiological bases, and metaphysical theories no longer had weight. In the treatment of mental diseases the intelligent physician should proceed in the same way as in treating other affections.

Masked Epilepsy.—Dr. W. B. Fletcher, of Indianapolis, said that this disease was usually unrecognized until it had progressed to a degree dangerous alike to the patient and those about him. Masked epilepsy presented one of the most intricate medicolegal questions. Little was known of the pathology. Among adults it was usually caused by alcoholic, syphilitic and autotoxic conditions. Treatment should begin with the mildest symptoms, and war be waged on the vicious constitutional tendencies.

Infantile Paralysis: Its Nature and Treatment.—Dr. Albert E. Sterne, of Indianapolis, said this was essentially an infectious disease, and was regarded by some authors as the purest form of a true nerve tissue process. Unless epidemic, diagnosis was almost impossible before there was evidence of spinal involvement manifested. When the child first became ill, almost all symptoms pointed to an affection of the stomach, usually a couple of days before paralysis set in. If evidences of profound nervous involvement were found, associated with vomiting, it should serve as a diagnostic and prognostic warning. Practitioners were confronted with a problem of a deep-seated inflammation in the spinal cord itself. Counter-irritation should be used along the spine; antiphlogistic applications, and the constant use of dry cold to the vertebral column. Perfect rest should be maintained. No specific was known to the profession. After paralysis had set in, the nerve cells themselves were the seat of inflammation. As soon as possible, electric stimulation should be applied to the paralyzed members. All measures were poor substitutes for the vigorous measures recommended in the initial stage. Results could then be attained which

were incomparably superior to the very best secured by any method later on.

Some Recent Investigations upon the Action and Therapeutical Value of Currents of High Potential and Frequency.—Dr. Curran Pope, of Louisville, Ky., mentioned a case of neurasthenia in which an abscess developed in the left thumb. The pus was evacuated, and a high frequency current applied for five minutes. There was immediate relief from pain, and no pus was found afterward. In another case with symptoms of formation of bone felon, with prevention as a result. These experiences had been repeated in many instances. The author was satisfied that the high frequency current had a germicidal effect on pus and pus-forming bacteria, and that this was in proportion to the presence of the ultra-violet ray. The author was now experimenting and gathering clinical data with reference to the direct action of the violet rays alone.

Local Lesions and Treatment of Amebic Dysentery.—Dr. James P. Tuttle, of New York, said there could no longer be any doubt that there was a type of dysentery due to infection by the *Amœba dysenterica*. Whether catarrhal, bacillary or amebic, dysentery had its origin in the large intestine. In his investigations he had found that the ulcerative lesions decreased as we ascended upward from the rectum into the sigmoid, and in several instances entirely disappeared at the length of the sigmoidoscope. Ulceration of the rectum was always present in cases of chronic dysentery in soldiers returning from the Philippines. Complications might be summed up in abscess of the liver and stricture of the bowel. As to treatment, the experiment of flushing the bowel with cold water was suggested, and repeated experiments had proved its worth. Flushings were given three or four times a day from a fountain syringe. In winter water direct from a hydrant was used; in summer a little ice was introduced. At least one douche a day was continued for eight weeks. Treatment of rectal ulcers should be carried on according to requirements. A summary of the author's experience was as follows: Total cases treated, 63; cured, 61; disappeared, 1; abscess of liver, 1; died, none.

Neuroses of the Stomach and Intestines.—Dr. Frank P. Norbury, of Jacksonville, Ill., read this paper. In reviewing the principal neuroses of the stomach and intestines, it was evident that the background of all was the neuropathic constitution. In treatment one should first consider this basis, and while doubtless, as investigations went on in the study of these diseases, a more definite pathology would be outlined, yet one would always have to consider the predisposition as a primary and important etiological factor. In treatment, it was necessary to follow the methods which best combat this feature, and which best subserve the observation of the case and the carrying out of the details of treatment. The rest treatment met these indications, and how well depended upon the thoroughness with which it was practiced. When each case was studied with consideration of all etiological factors, and as carefully watched during the course of treatment, the results would be highly satisfactory.

Castor Oil in the Treatment of Typhoid Fever.—Dr. C. C. Bass, of Columbia, Miss., reported last year 32 cases of this disease treated with castor oil. This year he reported 47 additional cases, which he and his associate had treated in the same way.

Scarlet Fever.—Dr. J. M. Batten, of Huntington, Pa., gave the history, symptoms, duration, incubation and variations in type of this disease.

Infantile Spinal Paralysis.—Dr. Alexander C. Wiener, of Chicago, said that infantile paralysis as a result of acute poliomyelitis, improved spontaneously in the first four months after the attack. From the establishment of the paralysis up to nine months the use of electricity, baths, massage and gymnastics was indicated. It inhibited the fatty degeneration of those muscles which were only slightly damaged and which by judicious stimulation usually recovered their tone. After nine months had elapsed, any therapeutic attempt was necessarily futile. Good functional results were obtained by a brace which would put the paretic muscles of the leg at an advantage over the stronger opponents. The permanent restoration of the balance of two opposing muscle groups might be effected in two ways: (1) By implantation of the paralyzed tendon into a normal one of similar function. This method was called the ascending or passive tendon grafting, as used by Goldthwaite. (2) Splitting off a part of the belly of a healthy muscle with its tendon and connecting it with the tendon of a useless muscle. This method created two new muscular individuals, so to speak, and therefore was called the active or descending tendon grafting. The greatest usefulness of tendon grafting would be found in the frequent cases of infantile cerebral paralysis.

Dr. A. C. Croftan, of Chicago, gave a summary of the recent investigations into the cause and treatment of diabetes.

Leucemia.—Dr. Wm. Britt Burns, of Memphis, Tenn., read a paper with this title, and exhibited a patient. He discussed the two recognized varieties of the disease; also the etiology, morbid anatomy and treatment.

Syphilitic Manifestations in the Nose and Pharynx.—Dr. Paul Turner Vaughan, of Hot Springs, Ark., said that in looking over the clinical histories of 500 cases of nose and throat syphilis, he did not find a single instance in which the primary sore was situated in either of these localities. Erythema, mucous patches, ulcerations and gummata might at various times be found in the nose of the syphilitic patient. Primary sores of the pharynx were not met with in Hot Springs as often as one would suppose, for among his cases of nose and throat syphilis he only found 4 cases in which the sore was situated in the pharynx. As to treatment of these conditions, attention should be paid to both the local manifestations and the constitutional cause. The primary sore should be cleansed with some antiseptic wash and dusted with some mild powder. Calomel is about the best he has found. Caustics locally applied in this stage did much harm.

The Principles of Diagnosis of Medical Malingering.—Dr. John Punton, of Kansas City, Mo., discussed this subject in a very exhaustive and interesting paper. He narrated the case of a man, aged twenty-two years, who, while leaning in the door of a freight car, claimed to have been struck on the back of the head and knocked senseless to the ground by the car door, which was supposed to have been fastened to the ceiling with an iron hook and jarred loose by switching. The lawyers for the plaintiff claimed that the man was seriously injured. The case came to trial. After a careful examination, Dr. Punton testified that the man was a malingerer, but in spite of his evidence and that of others, the man was awarded a verdict of $35,000 against the railroad company. The railroad company asked for a new trial, which was refused. Subsequently the judge, after hearing damaging testimony against the plaintiff, showing clearly that he was a malingerer, set aside the verdict and granted a new trial. It was developed at this trial that the plaintiff was unmistakably a malingerer. The plaintiff and his mother were now under bonds, waiting for the time to arrive set for their hearing. As to the final outcome,

it remained to be seen, but the speaker hoped that justice would finally prevail.

Cyclical Albuminuria.—Dr. Arthur R. Elliott, of Chicago, gave the clinical histories of two cases of cyclical albuminuria which possessed features of unusual interest. The most interesting feature of the two cases was the direct connection between the cyclical albuminuria and preceding acute infectious nephritis. There existed some doubt as to the exact nature of the original infection in Case I, but whether it was influenza or atypical scarlatina mattered little as far as the renal end product was concerned. In Case II the direct connection with scarlatina was clearly established. In both cases the nephritis was a mixed process attended by little systemic disturbance, slight renal desquamation, and moderate albuminuria. In both instances he thought the lesion was glomerular, a mild cortical involvement. An element of importance from a prognostic standpoint was the existence of chronic nephritis in the immediate ancestry of both of his patients.

(To be Continued.)

NEW YORK STATE MEDICAL ASSOCIATION.

Twentieth Annual Meeting, held at the Academy of Medicine, New York City, October 19, 20, 21, and 22, 1903.

FIRST DAY—MONDAY, OCTOBER 19, 1903.

Presidential Address.—The President's annual address, delivered by Frederic Holme Wiggin, was concerned mainly with recommendations as to incorporation of the American Medical Association by special act of Congress, as certain of the railroads have been, to enable them to do business with more facilities in many States. By resolution the delegates to the next annual meeting of the American Medical Association were instructed to bring this matter up for the consideration of the national body. A resolution favoring the abolition of the office of coroner and declaring it a relic of bygone ages, was also adopted. The dispensary law was endorsed.

SECOND DAY—TUESDAY, OCTOBER 20, 1903.

The first paper of the session was read by Dr. R. Abrahams, of New York, on sea bathing in some forms of skin diseases.

Sea Baths and Chronic Skin Diseases.—Dr. Abraham has found that certain cases of skin diseases intractable by ordinary methods, as chronic eczema and senile pruritus and various forms of pityriasis improve very materially as the result of sea bathing. In order to keep up the good effect produced he has attempted the use of baths in sea water at home, but has not found the same good results. It is evident that the conditions of sea bathing, the exposure to the air, the rubbing with sand, the thorough reaction after the bath, all contribute to the good results obtained, and physicians must bear this in mind for their obstinate cases of skin diseases.

Compound Fractures.—Dr. Bozovsky, of Dunkirk, N. Y., said that the general rule in the treatment of fractures is to take care of the open wound rather than the fracture. A rise of temperature twenty-four hours after the accident usually means an infection. In the child a rise of temperature does not necessarily mean infection. In older patients there may be serious infection and yet no special rise of temperature. The patient's general condition is the best sign as to infection. A brown-coated tongue indicates the presence of a septic process. With regard to the wound, when, as sometimes happens, it is slow to heal, Dr. Bozovsky has found that dusting with a mixture of acetozone and boric acid, 1 in 100 encourages the healing process. In flesh wounds the best dressing is simple sterilized gauze. In old wounds, wet dressing, the gauze being soaked in bichloride solution, 1 in 4,000 is preferable. In phlegmonous conditions unguentum Credé or the silver ointment invented by Credé, gives excellent results, but its expense constitutes a barrier to its use. If the bones are to be sutured, silver wire may be employed for this purpose and may be left in place. Where this cannot be done suturing with catgut or silkworm gut will prove effective. When large fragments without periosteal covering are broken off, they will not unite with the rest of the bones. Small fragments may even be taken out and sterilized and may yield very promptly. This has been shown to occur, even though the fragments are wrongly placed. If there is a gap between the bones, bone fragments may be employed to fill it up, with good results. If there is any doubt about the position of the bones, the X-rays should be employed to determine their position. The simplest dressing is always the best. A plaster cast may be readily applied, is not expensive, molds itself to the limb and may be put on from the beginning of the case, provided the circulation is watched.

Abdominal Stab Wounds.—Dr. F. J. Douglas, of Utica, N. Y., said that the rule in stab wounds of the abdomen now must always be to make an exploratory laparotomy. No matter how small the outside wound there may be severe internal conditions. At times, when the intestines have been penetrated, the patient's general condition does not show the seriousness of his injury. Weakness is no contra-indication to laparotomy. It may be due to internal hemorrhage and this can be stopped at once by tying off the bleeding artery, once the abdomen is opened. If the patient is suffering from shock the use of hot salt solution in the abdomen is the best possible restorative. The abdominal cavity should always be thoroughly cleansed after being opened by the surgeon.

Illustrative Cases.—An Italian, stabbed during a quarrel in the right abdominal region, half way between the umbilicus and the anterior superior spine, suffered from shock and vomiting. The wound on the outside was not more than two inches in length and bled very little and did not seem to indicate any serious internal injury. On opening the abdomen seven perforating wounds of the intestine were found and two in wounds of the descending colon. The wounds were sutured, the abdomen flushed out and two quarts of saline solution left in the abdominal cavity. The patient was very weak for three or four days, but recovered and was able to leave the hospital in about four weeks. His companion, suffering with quite as large an external wound in the left of the umbilicus proved to have no injury of the intestines, though there was an opening into the peritoneum over four inches in length. Another Italian that came under treatment suffering with a stab wound exhibited vomiting and shock, yet laparotomy disclosed no injury to the intestines, though the peritoneum had been opened.

Municipal Milk Supply Regulation.—Dr. George W. Goler, of Rochester, N. Y., gave the experience of Rochester in obtaining a healthy milk supply. He said that in this twentieth century there are schools for everything, except parents. The management of children is the most important factor for the health of the next generation. Provision of impure milk is worse than any other form of neglect for children. Adults may take milk from dirty barnyards and yet survive. There may even remain the false notion that Pasteurization purifies milk. Infants do not thrive on milk that contains more than 100,000 bacteria to the cubic milli-

meter, and it would be still better if the number were under 10,000. In Rochester it has been found that insistence upon the bacterial standard, though this has been considered impractical by milk inspectors in neighboring towns, constitutes the most effective way of regulating the milk supply.

Improvement in Conditions.—Before 1900 the average number of bacteria found in the cubic millimeter of Rochester milk was over 800,000. Twenty-six samples contained over 5,000,000 bacteria to the cubic millimeter. During the five years, from 1897 to 1902, 1,600 less deaths took place.

Comparative Child Mortality.—The death-rate of children under five years of age, in Rochester, as compared with the mortality at the same ages in other cities of New York State shows how much has been accomplished. In New York City 37 per cent. of the total mortality is of infants under five years of age. In Brooklyn, 36 per cent. In Long Island City about 30 per cent. In Yonkers, 26 per cent.; in Albany, 22 per cent.; in Troy, 23 per cent.; while in Rochester only 19 per cent. of the total mortality is of children under five years of age. These figures represent a decline of mortality of nearly 10 per cent. during the years when milk inspection has been insisted upon. This large reduction in the mortality of children has been brought about at a cost of less than $900 per year. The two important elements in the crusade against bad milk have been direct stable inspection of farms and dairy yards, and the insistence upon a bacterial standard as the criterion for purity of milk.

Benefits of Inspection.—Dr. De Lancey Rochester, of Buffalo, said that the experience in Buffalo showed the necessity for direct inspection of milk supplies. The insistence upon a bacterial standard was found impossible. A committee of physicians attempted the experiment of certifying to the quality of milk from sources which they kept under inspection It was found absolutely necessary, however, to keep up unexpected visits to farms or the precautions required would not be complied with. Dr. Rochester remarked that Dr. Goler is to be complimented on the state of affairs produced in Rochester.

Medium-sized Towns and Sanitation.—Dr. James J. Walsh, of New York, said that the political machinery of large towns is so hard to move that sanitary measures are often kept in abeyance. The country must look to towns of medium size for good examples in this matter, and Albany's experience in ridding itself of typhoid fever and Lawrence's good results from sand filtration are on a par with the present report from Rochester with regard to the improvement of the municipal milk supply. Nothing gives greater hope for the improvement of the general health of our cities than care for such sanitary conditions. There are 15,000 fewer little graves in the city of Chicago as the result of the summer heats of this year than there would have been if the death-rate of 1895 continued to the present time. Precious lives can be saved in very large numbers without very much expense, as Dr. Goler's experience shows, and no town or village is too small to profit by Rochester's experience. Rochester deserves the highest compliment that can be bestowed upon it, for its good work in this matter, not only because of the actual saving of life, but especially because of the inevitable good effect that its example must have.

Long Preservation of Milk.—Dr. Henry O. Marcy, of Boston, Mass., said that some years ago he was one of five physicians who attempted to keep proper track of Boston's milk supply. As a result of determined effort the death-rate among children was reduced some 20 per cent. The difficulties encountered, however, were enormous. The worst of these difficulties was the abomination of "one cow's milk." This was found to consist of milk taken to small stables within the city limits and there recanned and bottled under the pretense that it was furnished by one selected cow. This abuse was effectually stopped. The rise of large dairy interests in recent years and of such milk supply methods as those practised by the Walker-Gordon company have done much, but they have not yet solved the problem for the great mass of the population. In company with others, Dr. Marcy has been interested in a method for the concentration of milk, by which New Hampshire selected pure milk can be kept for two weeks. This milk has been sent to the Bermudas and back in a fruit steamer without souring. Such a process promises to revolutionize the milk industry, so that families will only have to obtain their supply of milk, even as they now do their butter, once a week, or even at longer intervals. This will enable cities to draw their milk supply from a much wider area than heretofore. In answer to a question, Dr. Marcy said that the concentration process did not seem to throw out the milk sugar, nor the soluble albumins of the milk.

Dr. Goler, in closing the discussion, said that if city sanitarians look to the Board of Aldermen for appropriations for the improvement of the milk supply they will not succeed. After he has decided on what he considers necessary for some projected improvement in municipal sanitation, he tells the Board of Aldermen that a friend will supply the money if they do not, and that, after the success of his plan he shall tell the people of the city that they refused to supply the funds. He always gets the money.

Failure after Nephroptosis.—Dr. Augustin H. Goelet, of New York, gave some 20 reasons for the failure of operations for movable kidney. These consist of conditions that exist before, during and after the operation. Delay until indigestion has become organic rather than functional, or until kidney trouble has asserted itself or associated ptosis of other organs occurs, are among the preliminary causes of failure. Failure properly to prepare the patient leads to vomiting after the operation, which loosens the kidney and causes failure. Improper insertion of sutures, the use of suture material that is too readily absorbable, or that becomes softened in the deep tissues, or that is not absorbed and causes fistula, are other reasons for failure. Too early removal of sutures, or the retention of gauze in the wound for more than forty-eight hours, or permitting the patient to turn on the other side before the tenth day, or allowing her to get up before the three weeks are passed, or failure to wear abdominal belt, or too early resumption of the corset. All these may bring on failure of the operation. Dr. Goelet has had 174 cases in 134 patients, and none of them have been done without good results.

Necessity for Primary Union.—Dr. E. D. Ferguson, of Troy, N. Y., said that speedy union is the most important thing for securing proper fixation of the kidney. Tissue formed after chronic inflammation does not hold well. The fatty capsule must be gotten out of the way and the kidney substance itself be brought in contact with firm tissues so as to secure permanent fixation. The old method of running sutures through the kidney substance itself is not advisable, as the kidney is too friable to permit of success. He believes that absorbable suture should be used.

Main Reason for Failure.—Dr. Martin B. Tinker, of Clifton Springs, N. Y., said that the main reason for failure of nephropexy operations is the co-existence of general enteroptosis in many cases. He is in connection with an institution where many chronic invalids are received and at least half a dozen patients ad-

mitted after nephropexy operations have proved to have secured no relief because of this condition.

Dr. Richard H. Gibbons, of Scranton, said that notwithstanding the liability of failure, kidney operations must be done in movable kidney, since it saves the organ from other complications. Where enteroptosis exists Beyea's operation should be done in connection with the nephropexy.

Dr. Marcy, of Boston, considers that kidney operation should be followed by closure of the wound in order to secure primary healing.

Dr. Goelet, in closing the discussion, said that unless the fibrous capsule is used for the production of adhesions, the kidney substance will tear through quite as it would if sutures were passed through it. The fibrous capsule must then be made a part of the new adhesions, though it must be carefully stripped off, otherwise the kidney will not be detached from the colon. The lower part of the fatty capsule, he thinks, should be allowed to remain, to act as a cushion and support for the kidney. Where proper precautions are taken as to details of technic, before, during, and after the operation, there is no reason for failure.

Cancer of Rectum.—Dr. James P. Tuttle, of New York, said that there are only two methods of treating cancer of the rectum in vogue: Inguinal colostomy and extirpation of the growth. When an artificial inguinal anus is made, death is, of course, inevitable. The question for the surgeon must be, Is it justifiable thus to cut off the patient from all hope? Dr. Tuttle shows by the records of 43 excisions that the making of an artificial anus is scarcely justifiable, since so many patients not only are given relief by extirpation, but live for many years, and so many of them seem to be radically cured. This teaching is all the more important now that cancer is evidently on the increase, and since all the other methods of treatment, the X-rays, the Finsen light and various forms of serum therapy have all failed and are proven inapplicable to rectal carcinomata.

Fatality of Rectal Cancer.—The disease is always unnecessarily fatal, unless radical operation can be done. The usual length of life is about nine months. This is true with or without colostomy, and it is doubtful if colostomy gives much relief. Patients on whom no operation is done seem to live quite as long, and, under opium, have not much more pain. In these cases the patient's condition always becomes so pitiable toward the end that death is welcomed as a relief. Even the saving of one patient then would justify surgical interference, and if such interference also brings hope of relief from pain and death without the needless agony of gradual invasions of all the perineal tissues, the surgeon is doubly justified. One thing is certain, no method except extirpation has ever cured a rectal carcinoma. Life, after extirpation, is always from three to six months longer.

Colostomy.—There are only two indications for colostomy. One is scirrhus carcinoma of the rectum, with complete closure of the caliber of the gut, because of contraction; the other is extensive hemorrhage from soft malignant tumor. In this case the inguinal colostomy gives a chance for curettage in order to put a stop to the exsanguination of the patient. Even after colostomy, it must not be forgotten that the caliber of the gut very seldom becomes completely closed, and that more or less fecal material is sure to pass through it.

Benefits of Extirpation.—The radical operation, when reasonably successful, restores the patient to strength and usefulness, and gives immediate relief from the preceding discomfort. Out of 41 cases operated upon by Dr. Tuttle, 12 were unsuccessful, mainly because patients in advanced stages of the disease were operated upon at the urgent solicitation of themselves and friends. Two cases, however, operated upon when apparently in a hopeless condition, and requiring very extensive operation, have survived many years after the operation. Of the 29 patients who were discharged after extirpation, 22 can be traced. Of these, 16 have lived for more than two years after the operation. One patient who was presented to the Association has lived for eleven years, another for ten, a third for seven; two have lived 6½ years, and two over five years since their operation. It is evident then that carcinoma of the rectum is not nearly as hopeless an affection as it has been considered.

Causes of Fatality.—The first reason for death after operation for cancer of the rectum is because of the late diagnosis. In three cases the neoplastic process had gone so far that nodules of cancer already existed in the liver. In one of these cases extirpation was done because the patient had insisted that he did not want to go back home with that tumor in his rectum, and would prefer to go home dead. Dr. Tuttle was tempted to do the operation from the consideration that removal of the rectum and sphygmoid would cut off the portal blood supply, and so starve somewhat the growths in the liver. This patient is alive, three years after the operation. The next most frequent cause of death is sepsis. Owing to the unclean nature of the parts operated upon, infection is bound to take place occasionally, notwithstanding the surgeon's care. In one case gangrene took place, because the blood supply to the lower cut end of the bowel was cut off by clamping. The patient died on the third day. Dr. Tuttle always cuts off sufficient gut so as to get a free bleeding from the cut surface, otherwise there is danger of gangrene. He insisted very much on the necessity for earlier diagnosis of cancer than is the rule at the present time. Physicians evidently not making a proper examination.

Dr. Marcy, of Boston, in the discussion, said that early diagnosis of rectal carcinomata would save more lives than any improvement of the surgeon's technic, or any skill that he might obtain in the handling of these cases. Dr. Ferguson, of Troy, N. Y., said that these operations are often extremely difficult and require wide cutting.

Dr. Ulrich, of Chester, the President of the Pennsylvania State Medical Society, said that the best hope for these cases lies in the X-rays, which may prove capable of preventing the growth of cancer and causing the disappearance of nodules that already exist.

Extradural and Mastoid Disease.—Dr. Seymour Oppenheimer, of New York, said that mastoid disease may extend so as to cause a collection of pus in the skull, extradural, yet without occasioning any serious symptoms. It is only a question of time, however, until such symptoms may declare themselves. In the meantime the patient is always in great danger. The sinus is not far distant, and any involvement of it is almost sure to prove fatal. If the purulent material succeeds in finding its way through the meninges, through the dura, it may cause either meningitis or abscess. Meningitis is characterized by excitement, restlessness, a high bounding pulse and complaints of pain. Abscess is characterized by apathy, usually slow pulse and not infrequently by vomiting. These are general rules, however, that admit of exceptions and abscess may cause excitement and restlessness. The necessity for operations in mastoid disease are very evident, and the only way to prevent the present large fatality from sequelæ of mastoiditis is to endeavor to do an operation sufficiently radical, so as to get rid of all the purulent material in this region.

School Hygiene.—Dr. H. Ernest Schmid, of White Plains, N. Y., said that one of the hopes for the

health of the rising generation consists in the proper hygienic direction of schools. The first and most important consideration is the selection of a site for a school building, and this must be kept out of politics. Dr. Schmid called attention to the fact that many improvements in school customs might be introduced that would conduce to the preservation of the health of children. The habit of having children sit down very quietly in school for long hours is very unnatural for them, and very hard. Adults would find it extremely uncomfortable, and children, who are by nature restless, must sometimes find it a little less than torture. Improvements in teaching, such as the adoption of the vertical writing, instead of the slanting, promise to prevent some of the curvatures of the spine that now occur. Over one-half of all those reported occur between the ages of seven and ten years, when patients are going through their second dentition and the body development is greatest. It is at this period particularly that faulty habits in sitting are almost sure to be followed by lasting deformity of the bony skeleton.

Mental Strain.—There is too much teaching at the present time and children are tempted to do more than is good for their developing minds. Infant prodigies nearly always die young and there seems to be no doubt that the overdevelopment of the intellect causes a serious drain on the bodily development at an important period. Mathematical centers particularly are latest in their evolution, and it is sure to prove a serious strain on children to force them to take up this subject early. No permanent good ever results. The science is learned insufficiently and only a distaste is acquired.

Dr. Silver, of Rahway, N. J., in discussing Dr. Schmid's paper, said that teachers not infrequently are utterly inexperienced in the care of the health of children, and are themselves in need of hygienic instruction in order to be able properly to care for those under their charge. School houses in country districts are apt to be insanitary from the beginning, and to be very improperly cared for. Improvements in these matters would surely lead to better health among the children and consequently leave them capable of becoming healthier men and women.

Hygiene and Physiology.—Dr. James J. Walsh, of New York City, said that the present trend of law is toward the better regulation of school hygiene, and especially toward the appointment of proper medical inspectors for schools. It is important, however, that there shall be no exaggeration of reason, for certain hygienic precautions for this will almost surely injure and retard rather than help the cause of progress in school hygiene. It is a doubtful matter whether slanting writing has had anything to do with the faulty positions assumed by children and the consequent development of scoliosis. After having abandoned slanting writing for a while, the public schools are now coming back to it, with the impression that somehow the centuries of education before had found, unconsciously perhaps, a method in accord with certain natural qualities in teaching slanting writing. With regard to infant prodigies, the argument drawn from them is almost sure to be weak, since these precocious children are precocious because of a certain premature spontaneous development of intellect, and not because of overurging at school. Undoubtedly there is the teaching of too many things, and physicians must insist on the old doctrine of much and not many things at school.

The Teaching of Hygiene and Physiology.—Dr. Walsh said that undoubtedly great improvement could be brought about in school hygiene by proper teaching of the subject. The present teaching of hygiene and physiology in the schools is a farce. Too much space in the text-books is devoted to teaching what is not true with regard to the use of alcohol and tobacco. This has made the American school text-books on this subject the laughing stock of foreign educators. The Committee of Fifty under physiology of alcohol declared after consulting many authorities on physiology abroad, that most of the so-called teaching was intolerable. Long ago Uncle Ezek said: "It is not so much the ignorance of mankind that makes them ridiculous, but the knowing so many things that ain't so." The public school children are being taught too many things that are not so.

Oxygen for Alcoholism and Neuroses.—Dr. Cordelia Greene, of Castile, N. Y., sent a paper on the use of oxygen as the best remedy for various neurotic conditions. She emphasized its usefulness in alcoholism and in neurasthenia. In the beginning of the treatment of these affections pure oxygen is used by inhalation, and after a time the patient is encouraged to deep breathing in the open air.

Dr. DeLancey Rochester said, in discussing the paper, that open-air therapeutics has in his experience proved much more beneficial than chemical oxygen. What is needed is the teaching to nervous patients of the necessity for full and deep respiration.

Dr. Quimby, of New York, said that with poor circulation it was impossible for patients to take oxygen out of the air. In these cases stimulation of the circulation is first required. Pneumonia patients must not only secure a supply of oxygen, but they must get rid of the accumulated carbon dioxides as well. He has seen Cheyne Stokes breathing produced by giving too much oxygen, with consequent overproduction of carbon dioxide, and its retention within the system owing to the failure of it to diffuse through the impaired lung tissues.

Bacteriology of Dysentery in Children.—Dr. William H. Park, of New York City, said that there are two principal forms of dysentery in children in this country. The severest form, which is rather rare, is produced by Shiga's bacillus. It is a type of Oriental dysentery. The other form is produced by a bacillus resembling Shiga's rather closely and evidently bears the same relation as the paratyphoid bacilli do to the typhoid group, though not quite of the same nature. This second class of bacilli produce a different serum reaction to that of Shiga's bacillus, producing indol and an acid fermentation in maltose, which Shiga's bacillus does not.

(To be Continued.)

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Medical Association of Greater New York Year Book, 1903. 8vo, 200 pages.

System of Physiologic Therapeutics. By Dr. S. S. Cohen. Volume 8. Rest, Mental Therapeutics and Suggestion. By Dr. F. X. Dercum. 8vo, 332 pages. P. Blakiston's Son & Co., Philadelphia, Pa.

Handbook of the Diseases of the Eye and their Treatment. By Henry R. Swanzy, A.M., M.B., F.R.C.S.I. Eighth edition. Crown 12mo, 580 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

Manual of Operative Surgery. By Sir Frederick Treves. New edition. Revised by the Author and Jonathan Hutchinson, Jr. In two volumes. Volume 1. 8vo, 750 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

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SPECIAL ARTICLE.

SPECULATIVE INVESTMENTS FOR PHYSICIANS.

THIS paper is presented after much hesitation in response to a request made by Dr. William Osler, who has viewed with extreme regret the growing tendency among doctors to indulge in mining and other speculative ventures. It is well for medical men to know that so eminent and distinguished a leader as Dr. Osler has found time in the midst of his manifold professional cares and responsibilities to interest himself in behalf of the younger physicians. His solicitude for their welfare has been sufficient to prompt him to devise means, if possible, for the practical solution of one of the unfortunate problems confronting the members of his profession. It was decided to urge upon some representative of the West, which was supposed to be the chief habitat of the speculation fever and the endemic source of the disease, the necessity of contributing a practical article on its etiology, prophylaxis and treatment. Its clinical manifestations and history are all too familiar to demand recapitulation. That the affection is widespread and increasing rapidly in prevalence and virulence with most serious after-effects, no one who is at all familiar with the situation can for a moment deny. The disease flourishes at all seasons, and affects all ages of medical men to whom a single attack unfortunately does not furnish complete immunity. It may be said to correspond to the clinical type of some of the acute infectious diseases in that it exhibits a definite cyclic sequence of events. This relates with especial emphasis to the sequelæ. The micro-organism is undoubtedly ubiquitous, and the degree of communicability, therefore, is measured essentially by the receptivity and virile freshness of the soil. Varied as is the period of incubation, the mode of onset is usually acute and characterized by a stage of mental efflorescence. Termination usually occurs by crisis. Although the prognosis is unfavorable the disease is seldom fatal. It frequently leaves, however, an indelible mark upon its victims.

A request to discuss this widespread affection coming from such a source, prompted by such ennobling motives, should not fail to inspire a ready acquiescence. A victim of the disease, perhaps not yet thoroughly immune, was unknowingly selected to describe its possible ravages and suggest means of prevention. The necessity for perfect frankness together with an appreciation of the utter incongruity of the position assigned me, compels the recital of the anecdote of the man unexpectedly called upon to participate in a temperance revival. His propensities to indulge in the use of alcohol were known only to himself, but unfortunately he was somewhat under its influence, when to his great embarrassment he was invited to address the audience. After stammering somewhat incoherently about the dire results of its abuse he hiccoughed his apologies to the astonished gathering and said he wished to help the cause along and knew nothing better than to offer himself as a frightful example. It seems fitting, perhaps, to offer the same preliminary statement in justification of my own remarks.

Ample opportunities for observation, among others and a vivid personal experience, should afford one a sufficient authority with which to attempt such exposition. As predisposing causes may be mentioned, the spirit of the times, the desire to grow rich rapidly, the effort to obtain something for nothing, the general development of the craze among all classes, the feeling of dissatisfaction with existing conditions, the tendency to unrest, and last but not least, a somewhat extravagant method of living.

An undue susceptibility applies to the medical profession through lack of preparation and of experience with commercial problems, necessarily involving insufficient acumen and business sagacity. The very nature of the daily work of the physician, the effort to relieve human suffering and prolong life with the benevolence of disposition and kindness of soul thus unconsciously inculcated, together with the frequent inability to acquire wealth despite most laborious effort and the assumption of grave responsibilities, renders the medical man an easy mark for designing and unscrupulous promoters. This lack of individual resistance is lamentably true and has long been recognized and taken advantage of by wily and sharp-visaged schemers.

Owing to these predisposing causes it is not surprising that he often becomes a ready prey to the attractive allurements of the bland-spoken manipulator. In view of these facts is it not a source of surprise that medical journals should further add to the temptations of their readers by introducing prominently notices of wild-cat investments clothed with all the attractions that bold type and conspicuous insertions may add to extravagant statements of assured profits calculated to appeal to the cupidity of its singularly unsuspicious victims. That medical journals, designed ostensibly for the material benefit and scientific advancement of physicians, supported exclusively by doctors and subscribed to and read solely for knowledge to be gained, should permit the very class upon which it depends for support to be victimized through its columns of advertising matter solely for commercial considerations, is a subject worthy of serious thought.

It may not be out of place to add that a single issue of a certain journal not long ago contained no less than four flaming accounts of definite profits to accrue from investments in as many mining enterprises. One announces that it is the "Doctors' Mining Company," another states that the glorious opportunity to get rich is open to physicians only, because one of its officers is a physician himself and wishes the benefits to be confined exclusively to his brother practitioners. Such generous and self-sacrificing consideration is a marvel in itself but speaks volumes as to the gullibility of the profession, else such a monstrous appeal would not have proven profitable. Such disinterested solicitation from strangers should be sufficient evidence to the wary of the insincerity of their motives and the inherent flimsiness of their ensnaring schemes. "Methinks the lady doth protest too much" is an expression capable of unique application to such empty vaporings as these. It is well to remember that the shark is simply after his victim's money and is capable of about as much consideration and mercy as is accorded the luckless sailor whose body is snapped in twain by the ferocious and hungry monster from whom the fitting appellation is derived.

Residents of the West have long since learned to beware of so-called friends, to say nothing of strangers, who approach with suggestions of entrance into mining stock propositions as alleged, on the ground floor. It is usually asserted that such opportunities of a lifetime have to be taken advantage of at the moment as positive assurances are given of immediate appreciation of values, while glowing visions of enormous dividends are presented before the bewildered eyes of the would-be purchaser. It may be added that the luckless investor finds later that instead of getting in upon the ground floor, he is occupying apartments in the attic, or possibly upon the roof, from which the descent to the cellar is more sudden than agreeable. Far be it from my purpose to decry mining as an industry or to belittle other legitimate ventures of a more or less speculative character. The contention is simply made that even such for physicians are not worthy of a moment's thought. It is assuredly quite as unfortunate in the end to attempt a mining venture, no matter how legitimate per se, when handicapped by lack of experience and knowledge as to repose blind confidence in others who are unhandicapped by conscience. The old axiom, "Let the shoemaker stick to his last" has been paraphrased in the language of the day, "Every man to his own graft." It cannot be denied that this homely yet pungent expression applies with more force to the doctors than to the followers of any other vocation in life.

If there is any class of men whose daily experience in rubbing up against raw human nature should finally inculcate conservatism and caution, and yet, as a matter of fact, who do exhibit a more sublime and lamb-like trust in the protection of wolves, such a class has yet to be produced.

Let it be understood that mining is truly an honorable industry and one of the many valuable resources of the West. Though not without its element of chance it is perfectly legitimate and when pursued in accordance with mining and business principles by men especially adapted by experience, patience, nerve and money, is an enterprise offering the possibility of satisfactory returns. At its best, however, there is always the miner's hazard which should never be lost sight of. Under the most favorable circumstances the risk must be regarded as considerable, even to those on the inside, assuming that operations are confined to the actual legitimate development of the property. If, however, a stock jobbing scheme is manipulated the promoters are like the sure thing men in that they take no chances, not even a gambler's risk. What opportunity has an outsider, many miles away, under such circumstances, to ever see the color of his money. He may as well bid it Godspeed and kiss it good-bye in the beginning. It may be that by the accident of chance an occasional successful result may be attained. If such exception to the general rule should actually occur let it not be forgotten that if speculation is persisted in, it is solely a question of time when the person temporarily successful will eventually have shared the same fate as his less fortunate associates. "Soon for some, later for others, finally for all," is a terse and true expression of the unavoidable result. "They await alike the inevitable hour."

The paths of speculation lead but to the financial grave. The practical essence of the whole matter is that the doctor is bound to lose his money in the end if he continues his speculation. When he goes up against another man's game there can be but one result. Every kind of a percentage is against him. There can be no such thing as an even break on the relative chances. It can be very positively assumed that the man selling stock knows more about the intrinsic value of the property and more of the probabilities of the future than the one to whom he is trying to sell. The doctor is placed at a tremendous disadvantage from the beginning in such transactions. In the same way if he is inveigled into the open market he has about the same chance as the proverbial snow-ball in Hades. It is the old story again of the other man's game, which is so surely played to win. The commissions which are alone sufficient in the end to impoverish the outsider and enrich the broker, do not by any means constitute the full extent of the burden handed to the investor in the beginning. He is obliged to use his own judgment about a matter concerning which he knows absolutely nothing, and which is sufficiently difficult and trying to bankrupt professional traders. The average man is so constituted that he will be glad to accept a small profit, but never a small loss. The latter has got to assume large proportions before a certain stubbornness, which is mistaken for nerve, will permit serious thought of liquidation.

After hanging on by his eyelids in his effort to remargin, and when every resource has finally become exhausted, the unfortunate speculator is compelled by dint of sheer force of circumstances to meet his loss. He invariably runs from a profit, but stays to be whipped in face of a loss. This factor inherent to nearly everyone is the real percentage in the game of speculation. As one patient, a broker, remarked, "If they keep coming we get their collar buttons." The fortunate speculator is the one who loses early in the game and then lets it alone. The one to be pitied is the one who wins in the beginning. The greatest failures have come from early successes, and the greatest successes in life from early failures.

The only way to make money out of speculation is to let it alone. Indulgence, therefore, in such means of securing wealth is deprecated for the doctor because of its universal impracticability and utter hopelessness. A stronger and higher argument against the merest trifling with speculative investments for doctors is, that such a course is unalterably and fundamentally opposed to the very nature of a physician's work for which there have been expended years of study and preparation, much money, and in many instances great energy and sacrifice incident to early struggles. To him whose purpose in life, whose habits of thought and action are along radically different channels, whose responsibile obligation demands concentration of energy, whose very leisure should be devoted to professional improvement, whose aims and aspirations are supposed to be lofty in character, whose daily life is devoted to charity and relief of human ills, a recourse to purely mercenary, commercial and speculative enterprises affords a species of degradation for which there is no sufficient justification or valid excuse. The peculiar requirements of mind, intellect and judgment necessary for the honorable and satisfying practice of medicine are inherently and diametrically different from those qualities absolutely essential to shrewd and successful speculation. Let no single person hope to succeed in each of these diverging channels of life. Each avocation is as distinctly opposed to the other as was the mission of Lorenz in Chicago different from that of Canfield in Saratoga and New York. One devotes his intellect, his nervous strength and his very life to the relief of great physical misfortunes, the other taking advantage of the weakness and frailty of human nature strives to separate individuals from their money, not only without tangible return, but at the expense of suffering and poverty with not infrequently suicide as a not too remote result. Those of us who have been permitted to witness the spectacle of little white-faced children, who had been born into the world misshapen and were destined to carry their burden through life, brought by their grief-stricken parents into the presence of the celebrated physician from Vienna, to receive from him the cheerful smile, the kindly greeting and the relief of their deformity solely through the influence of his powerful and yet exquisite manipulation, cannot fail to be profoundly impressed by its eminently humanizing influence. In scarcely a less degree the life of the conscientious physician in his every-day work, though admittedly less spectacular, is equally ennobling and praiseworthy. While the average practitioner of medicine is not afforded the opportunity for the popular and professional triumph which is accorded to Prof. Lorenz because of the peculiar nature of his work, the distinguished ability and the inspiring presence, yet he may have the consciousness that, inspired by the loftiest motives he, nevertheless, is employing his personal gifts to the best use.

How thoroughly must the physician be equipped to meet the exact requirements and to assume the enormous responsibilities of his calling? To what an extent must he be fitted by previous educational advantages and natural mental endowment and a suitable environment, to form scientific conceptions, to select facts wisely and construe them properly, to recognize and guard against errors, fallacies and pretense, and to maintain the eternal fitness of things by intelligent, conservative judgment? He must be prepared to analyze experience, to interpret properly scientific data, to adjust and summarize medical knowledge and apply it to the varying conditions of life. The ability and desire to faithfully execute his trust and conform to the obligations of his stewardship is utterly lacking amid the distractions and excitement incident to all forms of speculation. The physician is not only unfitted to a very great extent to perform the practical work which he has assumed, but is also, through the influence of speculation, unfortunately threatened by a certain inevitable transformation of character. The peculiar nature of the daily experience of the family physician, the intimate association with disease both physical and moral, the hourly observation of bodily suffering and mental anguish, the guarded trust of imposed confidences, the contact with misfortune, misery and poverty, do not fail of themselves in establishing a character which constitutes an asset not to be measured in dollars and cents. This golden influence is necessarily modified and perhaps destroyed if alloyed by the ceaseless and disappointing struggle for the gold itself. Is it possible to reconcile the placid composure, the gentle dignity, the sympathetic smile of the true physician with the restless eye, the nervous manner, the sharp features and furtive expression of the professional speculator. An existence, however, devoted exclusively to the relief of material ills, permeated by the spirit of charity, and controlled by the desire to increase the happiness of others, will strengthen the sense of one's obligations, add to the further development of his moral nature and enable him to fulfil his highest destiny as man and represent the true nobility of his profession. In so far as the practice of medicine is pursued in accordance with

these principles and actuated by the love of science, ignoring all that tends to commercialism and speculation, will it be found successful, satisfying and elevating. The degradation of the profession to a purely mercenary basis either with or without speculation will yield a financial remuneration entirely inadequate to the capital and energy invested and utterly insignificant in comparison with the loss of one's self-respect, the esteem of brother physicians and the confidence of the community. The acquisition of wealth or of especial prominence is not accorded to the medical practitioner in the legitimate exercise of his profession. Should these be secured through the favor of fortune it is usually at the sacrifice of at least a portion of his usefulness in his more appropriate sphere. He may, however, expect to obtain a moderate income, to be able to provide against want for his family and to enjoy to a reasonable extent the respect of his associates. His life is necessarily one of unremitting toil and personal sacrifice frequently invested with the voluntary assumption of anxious responsibilities, but the influence of his cheerful and often gratuitous work is eminently uplifting. Finally, let it be reiterated over and over again as an established fact of every-day experience and observation, that the physician, who, in his desire to accumulate wealth permits himself to dabble at first in the gentle and serene eddy of speculation not infrequently finds himself unconsciously lured to the middle of the channel and perhaps swept along the resistless current until he reaches the very sea of speculation, where, after a final plunge, he may be engulfed forever in its seething maelstrom.

The preceding course of remarks is actuated purely by the continued unfortunate results of speculation in all its devious forms, constantly witnessed in all parts of the country, in the East as well as in the West. If there be one physician who may chance to read this article and who may resolve to profit by the unpleasant experiences of others, the object of this paper will have been attained. Its preparation has been very much like the opening of an old wound, the only adequate compensation for which exists in the hope that some may be spared the personal disappointment, the bitterness of spirit and the self-condemnation which must so surely attend and follow all speculative investments for physicians.

Antiperistaltic Movements of the Stomach.—Observations upon antiperistalsis of the stomach are rare, since in general it is difficult to see the movements of this organ behind the abdominal parietes. E. RAUTENBERG (Deutsch. Arch. f. klin. Med., Vol. 77, Nos 3 and 4) has had occasion to observe this phenomenon in two cases of obstruction of the pylorus. In one the waves were only noticed when the stomach was distended with carbonic acid; they were never present at rest or after the ingestion of salt in strong solution. Similar motions probably also occur in the intestines but it is difficult to ascertain this without operation on account of the varying position of the gut.

ORIGINAL ARTICLES.

ON THE PRODUCTION OF SPECIFIC CYTOLYTIC SERA FOR THYROID AND PARATHYROID, WITH OBSERVATIONS ON THE PHYSIOLOGY AND PATHOLOGY OF THE PARATHYROID GLAND, ESPECIALLY IN ITS RELATION TO EXOPHTHALMIC GOITER.

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IN March, 1902, Gontscharukov, of Kiew, published a short paper in the *Centralblatt für allg. Pathologie* on the production of a specific antithyroid serum in which he states that after the injection at intervals of four weeks of an emulsion of dogs' thyroids into the subcutaneous tissues of a sheep, he was able to produce in other dogs by the injection of the serum of this sheep, which died during the experiment, certain tetanic symptoms which he thinks indicate the existence of a specific antithyroid toxin.

Knowing the literature on the physiological properties of the parathyroid glands as contrasted with those of the thyroid, it seemed desirable to control these results, and part of the following pages will be devoted to the experiments carried out with this in view.

Briefly stated, it has been shown[1] that the destruction of the thyroid alone produces disturbances of metabolism, which appear slowly, and gradually lead to cachectic conditions—the so-called myxedema. Destruction of the parathyroid alone, on the other hand produces the acute, rapidly fatal nervous phenomena which have so long been thought to be due to the extirpation of the thyroid. The most evident symptoms in this condition are the tetany and polypnea, which rapidly exhaust the animal. The confusion which has so long existed as to the relation of these symptoms to the thyroid depends on the fact that the parathyroids have only recently been discovered, and that, being small and inconspicuous organs, often embedded in the surface of the thyroid, they have usually been removed with the thyroid, hence the so-called early symptoms of thyroidectomy which produce their fatal effect before the true symptoms of thyroidectomy have had time to develop.

It was, therefore, proposed to attempt the production of a specific cytotoxin for the thyroid alone and similarly a specific cytotoxin for the parathyroid alone and to compare their effects. Now, since the parathyroids are so small, it is necessary to choose some animal which is slaughtered in great numbers for the experiment so that a quantity sufficient for immunization of another animal may be obtained. Besides this, it is important that the animal from which the parathyroid is obtained be small enough to be affected by a reasonable amount of serum which might be obtained from the immunized animal. Dogs were therefore chosen, since they vary much in

size and are slaughtered in great quantities in the dog pounds. For immunization the goose was chosen as an animal widely separate from the dog and highly resistant to infection. The thyroids of large quantities of dogs were obtained aseptically and with the same precautions the parathyroids were separated from them and emulsions of each organ were injected separately into the peritoneal cavities of geese provided for the purpose.

The process of immunization may be represented for convenience by the following table:

DATE	GOOSE 1. INJECTED WITH THYROIDS OF	GOOSE 2. INJECTED WITH THYROIDS OF	GOOSE 4. INJECTED WITH PARATHYROIDS OF
Dec. 13	4 dogs		
" 18	4 "		
" 24	4 "		
" 31	4 "		
Jan. 16	4 "		
Feb. 17	10 "	15 dogs	30 dogs
" 25	—	9 "	9 "
" 28	15 dogs	25 "	43 "
Mar. 8	—	35 "	46 "
" 18	22 dogs	22 "	30 "
" 31		39 "	39 "
Apr. 8		40 "	40 "

From this table it will be seen that in each instance a very large quantity of the organ in question has been injected into the peritoneum of the geese at relatively short intervals. They showed absolutely no ill effects of this treatment and are quite well to-day. Blood was taken at various times from veins in the wings, received aseptically, defibrinated and centrifugalized and the sterile serum used for injection into a series of dogs, as will be seen from the table following, and from the descriptions of the experiments. In some instances one injection only was made, in other cases two or three or even five injections were made at intervals, usually into the peritoneal cavity. Several of the dogs were killed after varying periods in order to study the histological changes in the thyroids, even though symptoms may not have developed. In one or two cases the animals died of peritonitis or of pneumonia.

In most of the others, which were kept until they died, a marked emaciation appeared with symptoms which might be considered as the expression of a general cachexia. In one instance only were there convulsive movements of the muscles.

Thus from the table it will be seen that dogs 1, 5, 7 and 9 showed definite emaciation, with symptoms of cachexia; conjunctivitis and furuncles on the skin with some anemia were the most noticeable things, and these to a less degree were present also in dogs 13 and 15. In all but No. 1, however, death seems to have been directly due to some intercurrent affection. The convulsive movments seen in dog 9 had not exactly the type seen usually after extirpation of the parathyroids, but were rather choreiform in character. It is difficult to find a satisfactory explanation for them.

The condition of the thyroid histologically in all of these dogs excepting Nos. 9 and 2 was practically the normal. No definite departure from normal could be made out in the cells nor in the alveolar contents. In No. 2 there occurred

DOG NO.	DATE OF INJECTION.	DATE OF DEATH.	AMOUNT OF SERUM INJECTED.	RESULTS.	DURATION OF EX. IN DAYS.	HISTOLOGICAL CONDITION OF THYROID.
1	Jan. 6 Feb. 10	Feb. 17	5 injections, 1 to 5 c.c. per kilo.	Emaciation, cachexia, conjunctivitis, death.	41	Normal.
2	Jan. 6 Jan. 13	Jan. 20	2 injections, 1 to 4 c.c. per kilo.	Killed; no symptoms.	14	Festooned and hypertrophied.
5	Jan. 27	Feb. 26	1 injection, 5 c.c. per kilo	Emaciation, cachexia, conjunctivitis, death of pneumonia.	30	Normal.
7	Feb. 3 Feb. 21	Feb. 22	2 injections, 5 c.c. per kilo.	Death of peritonitis; no symptoms; slight emaciation and cachexia.	19	Normal.
8	Feb. 3	Feb. 6	1 injection, 5 c.c. per kilo.	Dog killed; no symptoms.	3	Normal.
9	Feb. 10 Feb. 21	Feb. 25	2 injections, 5 c.c. per kilo.	Emaciation, cachexia; convulsive movements; pneumonia.	14	Degenerated and disintegrated.
10	Feb. 10	Feb. 18	1 injection, 5 c.c. per kilo.	Dog killed; no symptoms.	8	Normal.
11	Feb. 21	Feb. 28	1 injection, 5 c.c. per kilo.	Prolapse of rectum.	7	Normal.
12	Feb. 27 Apr. 7	Still alive	2 injections, of 3 to 5 c.c. per kilo.	No symptoms.		
13	Feb. 27	April 5	1 injection, 5 c.c. per kilo.	Emaciation, cachexia (?)	6	Normal.
15	March 7 March 12 March 24	March 26	3 injections, 5 c.c. per kilo.	Emaciation, urinary changes, death from peritonitis.	20	Normal.
19	April 11	April 12	1 injection, 5 c.c. per kilo.	Killed for comparison of thyroid extirpated before injection with the remaining one.	1	Both thyroids normal.
20	April 23	April 25 and 29	1 injection, 10 c.c. per kilo	Thyroids extirpated, one after two days, the other after six days.	2—6	Both thyroids normal.

the curious condition of enlargement of the cells which become elevated into folds and papillary projections, such as were described by Dr. Halsted in the regenerative hypertrophy of the thyroid after partial extirpation. Since this condition occurred but once in the series and since

it has been found several times in the thyroids of the dogs killed at the pound, it seems probable that this is merely an accidental occurrence here. In the thyroid of dog 9 marked disintegration of the epithelium with loss of colloid was actually found.

Dogs 2, 8, 10, 19 and 20 were killed or had the thyroid extirpated after the lapse of periods of one, two, three, six, eight and fourteen days from the time of injection of the serum. In none of these were there any symptoms whatever, and in every one the thyroid was found to be histologically quite normal.

From these latter experiments it seems quite evident that whatever the properties of the serum of the immunized animal it does not effect any injury to the thyroid cells in situ which is visible to the eye in the microscopical preparation. Nor in those dogs which were allowed to live as long as they would was any definite or constant lesion found in the thyroid tissue which could be ascribed to the serum unless it be the disintegration found in the thyroid of dog 9.

Nevertheless, with the exception of dog 12, which is still alive and well after repeated injections, several of these dogs became emaciated and subject to intercurrent affections. By way of control two dogs were injected with similar quantities of normal goose serum. Of these, one became emaciated and died without evident lesions after twenty-two days; the other showed no symptoms and is still alive. It seems possible that the emaciation may be due to the hemolytic effect of the serum, but if the test-tube tests of the hemolytic power of the specific serum can be applied to the behavior in the dog's body, a calculation will show that only a very few c.c. of blood will be destroyed by the amount injected.

It is possible, of course, that the emaciation and cachexia may be due to a specific action of the serum injected, perhaps by its combination with the specific secretion of the thyroid without any actual destruction of the cells, but merely the neutralization or elimination of the secretion. Certainly, as shown by the series in which the dogs were killed, the serum does not produce a histological lesion so severe that it could not be entirely recovered from by the hyperplasia of adjacent cells long before any symptoms could arise from thyroid insufficiency. Indeed, the extreme cachexia and emaciation of these dogs led to their death before the first symptom should appear in a dog which had been deprived of his thyroid gland by operation without injuring the parathyroid.

Injections of the serum of goose 4 immunized from the parathyroids of dogs were made in a smaller series as in table in first column.

A priori more might be expected from the destructive action of an antiparathyroid serum than from the antithyroid, because the symptoms and results of a destruction of the parathyroid appear so much more quickly and are so much more intense than those which result from thyroidectomy. The foregoing table, however, does not seem to show that any definite results have been obtained by the injection of this serum. One dog is still alive and shows absolutely no effect, the other two died after a number of days, in which they became much emaciated. In No. 16 there were convulsive twitchings of the muscles, but no dyspnea. It is possible that these twitchings were in this case the expression of a parathyroid insufficiency and that the serum had merely neutralized the normal secretion of the parathyroid sufficiently to allow of this development. In both of these cases, however, the parathyroids were histologically normal.

If any conclusions, then, can be drawn from these series of experiments they would be that the attempt to produce a cytotoxin capable of destroying the cells of the glands in situ has not been successful but that we may possibly believe that a material has been produced in the blood of the goose which will combine with the normal secretion of the dog's thyroid or parathyroid and neutralize it, thus allowing the symptoms which ordinarily follow extirpation of these glands to occasionally appear in a mild degree. It can hardly be thought, however, that the cachexia and emaciation which appear in almost all of these dogs and even in those injected with normal goose serum is dependent entirely upon the specific nature of the serum.

These experiments throw considerable doubt, therefore, upon the results obtained by Gontscharukov and especially upon his interpretation of them, for in any case one should not expect tetanic contractions as an effect of the destruction of the thyroid by a specific serum.

Dog. No.	Date of Injection	Date of Death.	Amount of Serum Injected.	Results.	Duration of Ex. in Days.	Histological Condition of Parathyroid.
3	Jan. 6 Feb. 10 April 7	Still alive	1, 2 and 5 c.c. per kilo.	No symptoms, dog still alive.	125	
16	March 11 March 24	March 26	2 injections, 8 c.c. per kilo.	Emaciation, slight twitchings; conjunctivitis, death of pneumonia.	15	Normal.
17	March 28	April 2	1 injection, 6 c.c. per kilo.	Emaciation, conjunctivitis.	5	Normal.

In the course of these experiments the interest of the writer became more strongly attracted to the problem of the nature of the parathyroid glands and their function in the body and rôle in disease, and since the production of a specific cytotoxin was so unsatisfactory, an attempt was made to further the knowledge of these glands by experimental and operative methods.

The history of the experimental investigations into the nature and functions of the thyroid is a long and familiar one, but that concerning the parathyroid is limited to the years since their discovery by Sandström[2] in 1880 and their rediscov-

ery by Gley[2] in 1892. Since that time a number of French and Italian workers have added greatly to the knowledge of these bodies, and several recent papers have reviewed the whole subject with full literature references. Especially noteworthy among these are the papers of Welch[4] and Benjamins[5] and Jeandelize.[6]

For years it had been noted that after thyroidectomy in certain animals there occurred symptoms of the most acute and intense kind, which led very rapidly to the death of the animal, while in other animals the same operation was attended by no serious consequence in adults or led in young animals after a long time to nutritive disturbances, changes in the skin and interference with growth—in a word, the symptoms known as myxedema which are analogous if not entirely identical with those of cretinism. There was much difficulty in the explanation of this difference in different animals, but it was observed that the so-called acute symptoms of thyroidectomy came on in carnivorous or omnivorous animals, while in those animals whose food was largely of a carbohydrate nature—the herbivora and certain rodents—such symptoms were not found, and it was thought that the excess of nitrogen in the food of the carnivora was the cause of the symptoms of acute poisoning. Restriction of these animals to a carbohydrate diet did indeed seem to moderate the violence of the symptoms if it did not entirely preclude them[7], but the difficulty was practically cleared up by Gley,[8] who showed that in rabbits, which were thought to be immune from such acute symptoms, the same clinical picture could be produced if, instead of the ordinary extirpation of the thyroid, one also extirpated the parathyroids, which lie so far away from the thyroid as to be always left behind in the usual operation. The parathyroids were thus shown to be organs of great importance. Gley found that they became enlarged if they were left and the thyroid excised and he, therefore, thought that they should be considered as portions of the thyroid which had remained in the embryonic state and which, on the extirpation of the thyroid, underwent such a hypertrophy as to compensate for the lost thyroid. This view, however, was soon disproven by the researches of other writers, among whom Kohn[9] may be mentioned. Gley found that the separate extirpation of thyroids and parathyroids in adult rabbits were alike unproductive of acute symptoms, but when both were excised—even though at widely separate operations—the tetany resulted very soon after the last operation. This seemed to support his idea that the parathyroids were merely embryonic structures ready to supply the place of the thyroids. It was soon discovered, however, that there are four parathyroids in the rabbit and that in extirpating the two distant glands and leaving apparently only the thyroid Gley was really leaving also the two parathyroids, which are intimately associated with the thyroid. After this discovery it was found that the complete extirpation of the parathyroids alone produces acute tetanic phenomena, while the extirpation of the thyroid alone still produces only the chronic cachexia.

Various detailed studies of the results of complete and partial parathyroidectomy have since been made and the names of Moussu,[10] Vassale and Generali,[11] Lusena[12] and others should be especially mentioned in this connection. Much confusion has arisen from the fact that in much of the work the thyroid has been extirpated as well as the parathyroid and this has stimulated inquiry into the relation of these glands to one another, a question which is still far from definitely settled. It was stated by Gley that the parathyroids become enlarged after extirpation of the thyroid and this has been confirmed by several authors, but Moussu has pointed out that this is no doubt due to the extirpation of two of the parathyroids with the thyroid, so that the hypertrophy is to compensate for them and not for the thyroid. There is no histological proof that parathyroid tissue can ever become converted into thyroid tissue, and there is now a general agreement of opinion that the glands are organs of very different nature. Moussu, however, holds that there is a functional relationship between them and this idea is supported by the discovery by Gley of iodine in their substance by the statement that thyroidectomy lessens the violence of the tetany which follows parathyroidectomy and that the thyroid undergoes some alterations after parathyroidectomy.

The object of this investigation was mainly to determine if possible the rôle of the parathyroid glands under normal conditions. In extirpating these organs from dogs and observing under various conditions the results, a beginning has been made and a number of the observations mentioned above confirmed, but much work, largely of a chemical nature, must be done before we can be said to possess any very clear light on the subject. Nevertheless, since the literature on the subject is still small, and nothing seems to have been published in this country, it has seemed permissible to publish here these results in the hope that they may at least attract attention to this organ, which is without doubt of considerable importance in the animal economy.

Dogs were used in these experiments and the operations carried out under aseptic precautions. Wound healing was usually good. The nature of the experiments and the results may be briefly set down in the table on next page.

The condition into which these parathyroidectomized animals fall after a few days is about as follows: Beginning with symptoms of unrest and anxiety with slight twitchings of the muscles here and there and fibrillary tremors of the tongue, the animal rapidly passes into a state in which the most violent tetanic spasms of all the muscles occur. The dog is able to walk at first but rather stiffly, the hind legs being especially awkward and beyond his control, frequently with a sudden twitch they slip from under him and bring him down upon the floor. Sometimes in

DOG.	DATE OF OPERATION.	DATE OF DEATH.	OPERATION.	SYMPTOMS.	ANATOMICAL RESULTS.
104	March 14	March 18	Parathyroidectomy.	Tetany, dyspnea, epileptiform convulsions, sialorrhea.	Thyroid normal.
106	March 12	April 5	Partial parathyroidectomy.	Emaciation, diarrhea.	Thyroid normal, slight folding of epithelium.
107	March 24	May 22	Partial parathyroidectomy March 24. Excision of left thyroid and remaining parathyroid May 6.	No symptoms.	Portion of parathyroid left embedded in thyroid.
109	March 31	April 3	Parathyroidectomy, sciatic cut during tetany. Spinal cord cut during tetany. Dog bled and transfused into another dog.	Violent tetany, polpnea 200 c.c. No abatement of spasms. Exophthalmus.	Thyroid normal.
110	April 2	April 10	Thyroparathyroidectomy.	Slight twitching, emaciation, cachexia.	
111	April 2	April 13	Parathyroidectomy; second operation for same, sciatic cut, only two parathyroids removed in all.	No symptoms.	
113	April 10	April 20	Parathyroidectomy, sciatic and crural cut, parathyroid injection, April 15.	Tetany April 15. No twitching in paralyzed leg; tetany continues.	Anterior horn cells show chromatolysis.
114	April 15		Thyroidectomy, two parathyroids left.	No symptoms.	Urinary changes.
115	April 18	April 21	Parathyroidectomy, nerves to leg cut.	Tetany, exophthalmus, Cheyne-Stokes resp.; tachypnea, no twitchings in paralyzed leg.	Anterior horn cells and pyr. cells of cortex show chromatolysis and swelling of nucleus.
116	April 21	April 29	Parathyroidectomy.	Tetany, tachypnea, etc.	Urinary changes.
117	April 25		Parathyroidectomy. Injection of parathyroid.	Twitching seems to have been stopped.	Still alive.
118	April 28		Partial parathyroidectomy.	No symptoms.	
119	April 28		Partial parathyroidectomy. Infusion of blood from No. 121.	No symptoms.	
120	April 23	May 9	Injection of goose serum. Thyroparathyroidectomy. Transfusion of normal blood. Bleeding and infusion of salt solution several times.	Tetany disappears after transfusion; cachexia.	
121	April 30	May 3	Parathyroidectomy. Transfusion of blood to No. 119.	Tetany, etc.	
123	May 5		Parathyroidectomy. Partial thyroidectomy.	No symptoms.	
124	May 6	May 9	Parathyroidectomy. Section of spinal cord. Transfusion of blood.	Tetany in non-paralyzed part.	
125	May 6		Parathyroidectomy.		
126	May 7	May 9	Parathyroidectomy.	Tetany.	
127	May 9		Parathyroidectomy. Infusion with blood of No. 124.	No symptoms; death during night.	

walking about or climbing stairs the dog suddenly falls to the floor in an epileptiform convulsion—the legs are stretched out rigid, the head stretched forward, all the muscles of the neck being thrown into a tetanic contraction—breathing stops for a few moments and is then gradually resumed, the legs finally relax and the dog recovers and walks about again. Usually, however, the onset of the tetany is more gradual and continuously progressive and from the condition in which spastic walking is possible the dog goes on to that stage in which, with all the muscles rigid and twitching violently, he is unable to stand at all. The most violent trismus with snapping of the jaws appears and the tongue is often bitten; saliva pours from the mouth; all the facial muscles twitch, and the eyes project from the fact that the upper lid is much retracted. Respiration is profoundly affected and the dogs appear to stretch out their heads, panting for breath. The rate of respiration is greatly increased, even up to 200 or 250 per minute. With

this there is no sign of cyanosis and the blood is readily arterialized by shaking up in the air. The tachypnea cannot, therefore, be readily explained as due to lack of proper oxygenation or air hunger. Sometimes it is very irregular and varies in the fashion described as Cheyne-Stokes respiration.

Exhaustion soon supervenes and the convulsions become less violent and the respiration less rapid, so that if the animal does not die in the height of the attack he lies relatively quiet for a time before death. During this series of phenomena the heart beat is not notably increased in rate—the initial shock is somewhat sharp and the curve high, but there are no marked changes. The temperature is said to rise markedly with the tetany and to fall again on its disappearance. Sensation seems to be very much dulled if not quite lost during the tetany.

Several problems in connection with this phenomenon, therefore, present themselves: (1) Are we dealing with a condition in which there is lack of some necessary secretion of the parathyroid? (2) Is there, on the other hand, a poison produced somewhere in the body which is circulating in the blood and producing these phenomena, but which, in the normal animal, would be neutralized either by the parathyroid cells themselves or by their secretion? (3) Is this poison produced by the metabolism of any particular group of cells, or, in other words, are there specific relations between the parathyroid and any other particular organ, for example, is this poison directly absorbed in the intestine or is it the waste product in the metabolism of the muscles or the noxious excretion from the metabolic processes in the nerve cells themselves?

The first of these questions seems not especially difficult to approach. If the parathyroid be conceived of as producing a secretion necessary to the functions of the body the effects of the lack of this secretion, which must be carried about in the blood since there is no other outlet, should not be ameliorated by the removal of the blood or its dilution. In order to determine this point the blood of a normal dog was transfused directly into the veins of dog 120, which, after removal of both thyroids and parathyroids, had reached the condition of violent tetany. The result was the complete disappearance of all tetanic symptoms after about four hours, and next day the dog seemed quite well. It might be objected that in so doing we injected with the blood of this normal animal the circulatory secretion of its parathyroid. The next day, therefore, when the effect of this transfusion of blood had apparently passed off and the dog was again plunged into violent tetanic spasms, instead of transfusing normal blood, the animal itself was bled and a somewhat larger quantity or normal salt solution (150 c.c.) allowed to run into the veins. The same immediate, or almost immediate, amelioration of the symptoms with complete disappearance of the tetany followed. Next day the tetany had reappeared and the bleeding and infusion was again carried out with success. So also upon the next day, although the dog had by this time become very weak and the tetany very slight—50 c.c., therefore, of blood were removed and 200 c.c. of salt solution infused—the result was the immediate improvement of the dog, so that he could run about. After this there was, strangely enough, no recurrence of the tetany and the animal passed gradually into a cachexia, due, perhaps, to the thyroidectomy, and died after several days. Similar results have been obtained by Lusena and others. The idea that the parathyroid is active chiefly in neutralizing some toxin seems, therefore, more plausible, although it is perhaps not absolutely proven by this single experiment.

No especial light seems to be shed upon this point by the observations of various authors (Lusena, Vassale, Generali, Moussu and others) that the tetany may be stopped or prevented by the injection of emulsions of the parathyroid gland. This corresponds obviously with the transplantation of the gland and is analogous with similar experiments made with the thyroid. In two of our dogs, 115 and 117, it was possible by the intraperitoneal injection of an emulsion of the crushed parathyroids of the ox, filtered through a cotton cloth so as to exclude large fragments, to cut short tetanic attacks already begun and to postpone by many days the fatal result, and Lusena has been able to keep dogs alive for a long time by such a process. This shows, at any rate, that it is not necessary that the gland should be intact and in its normal connection with the blood vessels in order to carry out the function, but that the extract is quite as efficient as long as it lasts.

Verstraeten and Vanderlinden have shown that the tetany is less violent and appears later when the dogs are kept on a milk diet than when given a diet of pure meat, which perhaps adds support to the idea that a poison is produced in proteid metabolism. In order to control this, one parathyroidectomized dog (No. 125) was fed exclusively on bread and water after the operation and in this case no tetany developed within the twenty days that the dog lived. One such case, however, is very inconclusive, since one is never absolutely sure of the completeness of the operation. Again, it has been observed (Vassale and Generali, Lusena) that the tetany resulting from the extirpation of the parathyroids alone is far more intense than in those cases in which the thyroids were also extirpated, and Lusena has even shown that the tetany once begun can be made to disappear by removing the thyroids. Vassale and Generali explain the milder results of thyroparathyroidectomy on the ground that removal of the thyroid decreases the proteid metabolism and hence decreases the amount of poison thrown into the circulation and ordinarily neutralized by the parathyroid. Lusena objects to this explanation, however, on the ground that the ameliorating effects of thyroidectomy come on at once and that they do not follow a partial thyroidectomy. His

observation, that the tetany once started can be cut short by thyroidectomy has not, however, as far as we can ascertain, been confirmed, and his explanation of the phenomena seems, therefore, not very strongly supported. This explanation is based on the idea that the functional relationship between the thyroid and parathyroid is very close, and that the symptoms of parathyroidectomy are chiefly due to the removal of the influence of the parathyroids from the thyroid.

In two of our dogs, 110 and 120, we have not been able to confirm these results, for in these the tetanic convulsions appeared in both instances two days after the operation. As yet we have not had an opportunity of repeating Lusena's experiment in removing the thyroids during the tetany of parathyroidectomy.

It may be said, therefore, that while it seems improbable that the parathyroids secrete a necessary material which is circulated in the blood, the lack of which produces the disturbances described, it does seem probable that they produce a material which neutralizes poisons produced elsewhere, poisons which if not so neutralized may be mechanically washed out with the relief of the symptoms. Of course, it may be claimed that the parathyroid secretion is necessary to the metabolism of, say, the nerve cells, that without it the perverted or incomplete metabolism throws the nerve muscle apparatus into the tetanic state described, but since this must be due to the presence of stimulating materials, it forms only an example of the neutralization idea in which the metabolism of the nerve cell is particularly concerned.

In order to approach this point more closely it was determined to transfer the blood of an animal in tetany into the veins of another animal. Several experiments with this end in view were therefore made. In one the blood, about 50 c.c., was injected into the peritoneum of a small dog, but without any effect. In another case the test dog was first partially parathyroidectomized and then under ether the aorta of a parathyroidectomized dog in violent tetany was connected by canulas and a rubber tube with the jugular vein of the test dog and the full stream of blood from the aorta allowed to pour into the jugular vein until the tetanic dog was dead and blood had ceased to flow or flowed only very slowly. The jugular vein was then ligated and the wound closed and the dog allowed to recover from the ether. Although it was carefully watched, no signs of tetany developed. It seemed probable that in this dog enough of the parathyroid had been left to carry out the function of neutralization of the supposed poison. In the next case, therefore (dog 127), complete parathyroidectomy was performed, and the dog, which weighed about 3,000 grams, bled 100 c.c., and then only was the canula from the aorta of dog 124, at that time in violent tetanic convulsions, tied into the jugular vein and the aortic blood allowed to flow into that vein until dog 124 was dead. Even so, absolutely no signs of tetany developed during the next forty-eight hours and the dog died some days later during the night without having at any time exhibited any tetanic symptoms. It seems possible, however, that even in this case sufficient of the secretion of the parathyroids was present in the remaining blood and in the tissue juices of this freshly parathyroidectomized dog to neutralize whatever poison was introduced with the blood of the tetanic dog, so that the most that might be expected would be the somewhat earlier development of the tetanic symptoms due to the parathyroidectomy of this animal itself. Baldi[13] has in the same way injected the blood of thyroidectomized animals in the tetanic state without any result. The experiment, therefore, seems entirely inconclusive as to the question of the presence of a poisonous material in the circulating blood of a tetanic animal.

It seemed then of interest to localize a little more definitely the point of attack of this hypothetical poison, to determine whether the twitching of the muscles were due to the effect of some material on the muscles themselves or to an affection of the nervous system and if the latter, of which part of the nervous system.

It was noticed that the administration of ether abruptly stopped the tetany and the tachypnea, the respiration returning to normal, but being very apt to cease abruptly, causing the death of the animal. This is perhaps to be explained by the idea that the respiratory centers are fatigued by the extraordinary dyspnea and any depression of reflexes allows them to cease their function.

More accurate localization seemed, however, to be obtained from the following experiments:

In one dog (No. 111) the sciatic nerve was cut at the time the parathyroidectomy was performed, in others (Nos. 113, 115) the sciatic anterior crural and obturator were cut. In these dogs, especially in 115, in which after the intra-abdominal section of the anterior crural and obturator and the very high section of the sciatic, paralysis of the leg was complete, it could be easily observed when the convulsions appeared that while the muscles of the other leg were in violent spasmodic contractions the paralyzed muscles lay perfectly quiet. There is a thrill which can be felt in the tetanic limb, even when more violent contractions are not actually present for the moment, which is quite absent in the paralyzed leg. The effect, therefore, is not on the muscles themselves, but rather to be localized in the central nervous system. In another dog (124) the spinal cord was cut through at about the sixth dorsal vertebra and parathyroidectomy performed. The dog was, of course, completely paralyzed in the posterior part of the body, there was incontinence of urine, continual dribbling from a distended bladder, etc. and flaccidity of the extremities. Reflexes and muscular power were still present there however. Scratching in the inguinal region produced movements of the tail and pinching of the deep muscles produced movements of the legs. Three days after the

operation for parathyroidectomy the dog was found in tetany. No dyspnea nor tachypnea, but the forelegs were held perfectly rigid with occasional well-marked clonic spasms. All the muscles of the anterior part of the body were in violent twitching motion, trismus and fibrillary twichings of the tongue were observed. The posterior portion of the body was far less violently convulsed than the anterior, indeed the twitchings seemed to stop sharply at the middle of the body—the tone of the muscles in the hind legs was lost to a great extent and the limbs had none of the rigidity seen in the forelegs. There were, however, slight visible tremors, which showed through the skin by the slight spasmodic elevations and movements of the hair.

It is, of course, impossible to draw definite conclusions from one such experiment, but it seems at least to indicate that the stimulation is not chiefly a stimulation of the anterior horn cells of the cord, but that the upper motor neurons are also, and perhaps chiefly, affected, for were the lower motor neurons independently affected one sees no reason why violent spasms of the hind legs should not occur in this case, in which the connections with the cord are still intact.

The histological examination of the spinal cord and cerebral cortex in these cases has failed to show us any such degeneration of tracts in the cord as has been described by Vassale and Donaggio,[14] but there are evidences of swelling of the nucleus of the anterior horn cells and of the cells of the cortex with chromatolysis, as shown by the method of Nissl. These correspond in every way with the acute degenerative changes described in so many toxic conditions. The further study of these changes will be reported at a later date.

In several of these dogs in which parathyroidectomy had been performed with death from the usual symptoms, as well as in others in which thyroparathyroidectomy and thyroidectomy alone were carried out, attempts were made to study the changes in metabolism as evidenced by the output of nitrogen in the urine. The analysis of the urine was made by Dr. Slemons of the Johns Hopkins Hospital, and will probably be published later by him in detail with the charts of the observations, but, roughly speaking, it may be stated that in the cases of parathyroidectomy practically no changes in the nitrogenous content of the urine could be made out, while in the cases of thyroparathyroidectomy and in the case of simple thyroidectomy in which two of the parathyroids were left in situ, marked alterations occurred, consisting in a diminution in the amount of nitrogen in the urine, with alteration of the relation normally existing between the compounds that go to make up this.

A summary of the results of these cases, rough as the estimations were, still serves to show that there are distinct differences between the effects of parathyroidectomy and those of thyroidectomy or of thyroparathyroidectomy, as follows:

After the parathyroidectomy the ammonia is slightly increased just after the operation with speedy return to normal. Other nitrogenous elements show no change.

After thyroidectomy the ammonia is primarily diminished, then markedly increased, urea is decreased, amido acid nitrogen increased and the nitrogenous compounds precipitated by phosphotungstic acid increased.

Together with the results of other observations, this tends to show that, while the thyroid gland has a definite and marked influence upon the course of metabolism the function of the parathyroid is directed to a different purpose and is not specially concerned with metabolism. It is interesting to note that daily observations of the urine of dog 15 in the preceding series, in which a specific antithyroid serum was several times injected, there was after each injection a temporary alteration in the nitrogenous constituents of the urine which corresponded in every way with that observed after thyroidectomy.

In the course of these experiments the idea naturally suggested itself that there might be some disease analogous in its symptoms to those produced by the extirpation of these glands and the symptom complex of exophthalmic goiter with all its difficulties of explanation presented itself at once as at least somewhat similar. Perusal of the literature showed that this idea had been put forward by Gley [15] and acted upon by Moussu,[16] who treated a case of exophthalmic goiter with the parathyroids of the ox. Moussu reports a marked improvement in his case, which was, however, unfortunately carried off by tuberculosis during the treatment. Since that time there has apparently been no attempt made to treat this disease with the parathyroid extract.

When we compare the symptoms of exophthalmic goiter with those following extirpation of the parathyroids we do find certain analogies, but they are after all not so striking as they might be at first glance.

Tachycardia, so constant in the one condition, is not found in the other; the tremor in the one is represented by the violent convulsive movements of the other. Exophthalmos is sometimes approached if not actually well developed in dogs. Partial parathyroidectomy in dogs produces no symptoms unless under the stress of some physical strain, such as lactation, when the symptoms (Vassale) are those of complete parathyroidectomy. Still we must remember, if we think of exophthalmic goiter as due to a parathyroid insufficiency, that it cannot be entirely analogous in any way to the effect of extirpation of the parathyroids in the dog, for there, instead of a gradually progressing disease, we have the acute and fatal results of a complete extirpation of the glands. There remains then a general resemblance between the symptoms of the two conditions, with differences perhaps explicable from the differences in the duration and completeness of the parathyroid insufficiency. More light should be forthcoming from an anatomical and experimental study of exophthalmic goiter, and,

indeed, Benjamins has recently examined the parathyroids in three cases of the disease and has declared them to be practically normal. In several cases of exophthalmic goiter which have occurred in this hospital and in which portions—usually one whole lobe—of the thyroid have been removed for operation, I have been able by the kind permission of Dr. Halsted to search for the parathyroids. In this I have been assisted by Mr. Whipple, who will later publish a description of the histological changes in these cases. It will suffice to say here briefly that in the tissues preserved from eight cases it has been possible to find parathyroid tissue in four. Since, however, the tissue in all of these cases had been handled a good deal and many pieces removed for examination, it is quite possible that parathyroid tissue would have been found in all had the proper opportunity offered. In one other case which died without operation search at the autopsy failed to reveal any trace of parathyroid tissue. This was a case in which the symptoms were extraordinarily intense, and the patient actually died from the disease itself, a condition very different from that in the other cases, in which the symptoms were moderate. In all of these cases it was difficult to find the parathyroids, and they were distinctly smaller than normal in all. In two of the cases no very definite change other than the decrease in size could be made out, while in the other two very distinct degenerative changes in the parenchyma cells with overgrowth of connective tissue could be observed. It seems justifiable, therefore, to conclude that there is evidence in these cases of distinct diminution in the bulk and degeneration and disappearance of the cells of these glands. Whether this indicates that the symptoms are those of parathyroid insufficiency is, however, another matter. Against this idea is the fact that recovery, or at least great amelioration of the symptoms, is so frequent after the operative extirpation of the one lobe of the thyroid with which, as I have just shown, the parathyroids are probably always removed. If the disease were due to a parathyroid insufficiency it is hardly probable that the condition of the patient would be improved by removal of half of the bulk of the already insufficient parathyroids.

Nevertheless, in view of the anatomical changes in these glands and the favorable result obtained by Moussu, and in spite of the fact that favorable results have been reported in the treatment of this disease from the use of almost every possible remedy, parathyroid feeding has been instituted in one case in this hospital. For the past month this woman, whose symptoms are the usual ones in a moderate degree of development, has received daily twelve of the raw parathyroids of the cow. The glands used are the larger external ones which lie embedded in the thymus and quite separate from the thyroid—twelve of such glands therefore represent approximately the parathyroid tissue of three cows. So far absolutely no effect has been noticed—the pulse rate continues at about 120, tremors are marked and the test sheet of writing which she copies at intervals show about the same shakiness. Still, if the parathyroid glands were less difficult to obtain, it seems desirable that further tests of this therapeutic measure should be made, and with this in view an extract of the gland is now being made. Similarly it seemed possible from the observations of the epileptiform attacks seen in some of the dogs that certain forms of epilepsy might be due to a similar cause. No opportunity has as yet offered itself, however, for the study of the glands in this disease, nor has it been possible to feed these patients with the parathyroid glands.

Probably other convulsive diseases might be suggested which could possibly be brought into relation with the alterations of this gland. At any rate, the aim of this incomplete paper will be largely attained if it succeeds in directing some attention to the study of so important and little known an organ.

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SKIN LESIONS ASSOCIATED WITH RAPID GROWTH OF LONG BONES, LINEÆ ALBICANTES. (LES VERGETURES DE CROISSANCE. JULES COMBY.)

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For some years I have had in mind the scars-across-the-knee here shown in photograph. I could never explain the scars of my early patient; I had never seen any like them, and in several years of subsequent hospital observation I have not added a similar case to my experience. They come under the names of lineæ albicantes, lineæ atrophicæ, etc., and are exactly similar to those on the parturient woman's abdomen. I incline to the belief that this particular lesion, or this particular locality of lesion, is not common.

Last summer I picked up in Paris a new edition of Jules Comby's book on children's diseases. In looking it through I came upon a chapter—Maladies of Growth. Here I found described exactly the case under consideration. The lesion figured in the photographs pertains to an adult male, in the neighborhood of—perhaps, rather more than—six feet. His case is as follows:

He belongs to a tall family, but the patient is two inches taller than any of the others—father or brothers. At the age of seventeen years the patient was rather below the average size, wore size 12 collars and gloves of ladies' size. At the age of seventeen he contracted typhoid fever, was very sick, in bed six weeks, his life, he was told, was despaired of for five days. When he first stood up he was said to have grown in height. For two years he frequently heard the exclamation, "How he grows." Those who had not seen him for two weeks declared he had grown perceptibly. A chum of his of nearly equal size, before his illness, could within three years stand under his outstretched arm. He is sure of this, because they were both in the same circle of friends and the experiment was often

apyretic, which condemn a child whose growth is not yet terminated, during a long time, to horizontal rest, has for habitual result very remarkable growth in height. A child which presents each year an average growth of 5 cm. often passes this limit in some weeks, under the influence of a typhoid fever, for example: An elongation of the long bones is so rapid in such cases that the development of the skin is not able to keep pace, and there result frayings (éraillures), wales, welts (vergetures), the habitual location of which corresponds to the femero-tibial regions. The accession of growth is explained by the horizontal position, which results in annulling the reciprocal pressure of the bones and by the irritative congestion of the bony marrow which typhoid fever generally produces."*

Fig. 1.

Les Eraillures after Typhoid Fever in a Rapidly Growing Youth.

tried. The fact of unusual and exaggerated growth seems established. He remembers his illness thoroughly, that he was greatly emaciated, that his knees were never swollen, that his feet were swollen when he began walking out of doors, but not his knees.

As to the scars across his knees, he feels sure they were not there during his convalescence, and he cannot recall when they first appeared. When first seen, they were pinkish, like wales or welts made by a switch. Does not recall whether they were raised any more than at present. There are no other similar scars on his limbs or body.

The elements of this case are summed up in Jules Comby's book, and I have never seen so full an account elsewhere.*

"All acute and chronic illnesses, febrile or

Under Typhoid Fever, he speaks of a girl, aged thirteen years, who suffered several relapses of typhoid fever, who was in bed four months, recovered with rapid growth and pronounced welts (belles vergetures).†

"It is not rare to see a child present as result of typhoid fever a rapid and excessive growth. Such growth shows itself sometimes, besides elongation of the skeleton, in cutaneous welts (vergetures), having for their location the knees, and may occupy also other parts of the body."

In speaking with friends, I have been able to find one case similar to that here shown. I am indebted to Dr. Charles Norris for the following:

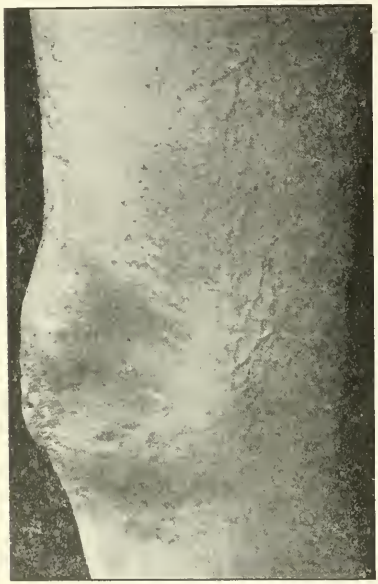
A girl thirteen years old, in the summer of 1878 suffered a prolonged attack of typhoid. The doctor's account of the vergetures is as follows: "The scars have irregularly edged bor-

* Maladies de Croissance. Traité des Maladies de L'Enfance, fourth edition. Paris, 1902.

* Loc. cit., p. 267.
† Loc. cit., p. 113.

ders. The epithelium which covers them is glistening or glazed, or porcelain-like in appearance. They vary in length one to three inches; in breadth one-quarter inch or more, in places. Over the dorsal surface of both knees I should

Fig. 2.



Les Eraillures after Typhoid Fever in a Rapidly Growing Youth.

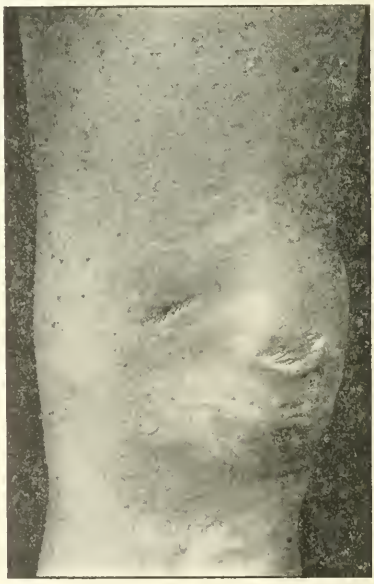
say there were at least 15 to 20 scars, which are slightly curved, arranged in more or less parallel rows and run at right angles to the length of the bones. They are found only over or just above the knees. A few smaller and less conspicuous scars are found over the back of the upper arm just above the bend of the elbow, more marked over the right than the left arm. They also are parallel, one just above the other, three or four in number. The lesions appeared as large, intensely reddish or bluish welts raised above the surface. Apparently they remained stationary for a number of years; the evolution into the present whitish flat scar having been a very gradual one. The scars were a source of annoyance on account of their reddish color, which shone through thin sleeves. Evidently they were reddish five or ten years after recovery from the disease. Neither the patient nor her friends are quite sure when—that is, how long after or during convalescence, they made their appearance. But it seems more than likely that they were noticed some time during the convalescence, which was a protracted one. The location of the scars, exclusively over the epiphysis of the long bones, seems to confirm the explanation which M. Jules Comby offers."

Hare, in the "Medical Complications of Typhoid Fever," p. 249, says: "A somewhat unusual lesion of the skin resulting from typhoid fever, is the development of lineæ albicantes. It is stated that they occur most frequently in children and young adults. Bucquoy notes that in boys these whitish lines have no special area of distribution, but in girls, the breasts and crests of the ileum are the places where they usually appear.

Barie has reported the case of a girl of seventeen years in whom these lines appeared over the knuckle-joints of each hand.

A somewhat similar condition, due to localized atrophy of the skin, is recorded by Bradshaw. In his case, a girl of thirteen years, who had suffered from typhoid fever followed by relapse, and again by a second relapse, finally developed during convalescence upon the inner surface of the lower one-third of the thigh, a number of

Fig. 3.



Les Eraillures after Typhoid Fever in a Rapidly Growing Youth.

horizontal markings, some of which practically surrounded the limb. They were about one-half inch in width, regular in contour, and almost exactly alike on both legs.

The skin lesions, in the case photographed (les vergetures), are located as the patient stands,

over the patella, and just above. They are symmetrical. When the knees are flexed at right angles the scars ride up with the skin and are distributed over the lower end of the shaft, epiphysis and patella, on the extensor and lateral surfaces, rather more marked on inner surfaces. There are none on other skin surfaces of the body. Patient does not remember when they first appeared. They were first pinkish, later porcelain-white and never painful. The scars are about a line in width, irregular zigzags running together, 20 to 50 on each knee. They are in every way similar in appearance to the lineæ albicantes of the parturient woman's abdomen.

The same causes which make frayings of the skin in the rapidly growing abdomen of the pregnant woman, may act in a similar way in the rapidly elongating long bones of the leg in the particular combination of youth, typhoid fever exaggerated growth of bone and enforced horizontal rest. Literally, it would seem that the skin cannot keep pace with the bones and frayings result.

CAFFEINE IN THE TREATMENT OF ALCOHOLIC TOXEMIA.*

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Since the introduction of caffeine every writer on the subject has referred to the good results following the ingestion of strong coffee or tea by the victim of acute alcoholic toxemia, and every writer on alcoholic toxemia has advised the use of tea or coffee in the treatment of these cases; consequently the first impression created by a proposition to use caffeine in treating alcoholism may be that it carries with it nothing new or novel; however, as no investigator, so far as I am aware, has recorded his experience in the use of caffeine as a safe therapeutic agent that can be relied upon to produce definite results in treating alcoholic toxemia, I take the liberty of bringing the matter to your attention.

One of the first, and perhaps the most important features in the treatment of acute alcoholic toxemia, or an acute exacerbation of chronic alcoholic toxemia, is the withdrawal of the supply of alcohol. In some retreats where the patients would seem to be at the mercy of the attendants, this withdrawal is accomplished with difficulty and delay, on account of the importunities of the patient, who seems to think that nothing will do him a particle of good unless he can secure one more dram, and another, and still another, and so on. In private practice the supply of alcoholics is frequently continued for days, hoping that the patient will finally consent to their withdrawal; but as a rule this practice only prolongs the sufferings and anxieties of all interested parties.

A review of part of the symptomatology and pathology of acute and chronic alcoholism and the clinical and experimental results obtained from the use of caffeine, would seem to suggest caffeine, as a specific for alcoholic toxemia, as I have endeavored to show in the following table:

Symptoms and Pathology of Alcoholic Toxemia.	*Therapeutic Effect and Physiological Action of Caffeine.*
[1]Kidneys are irritated and an increased amount of urine is secreted. If the irritation is too intense the glomeruli are swollen and the secretion of urine is diminished or prevented.	[2]Three grains of citrate of caffeine is a diuretic.
[1]The blood is improperly aerated. Waste material is retained in body.	[3]Caffeine is recommended in all cases of venous congestion with intact kidneys.
Sleeplessness and depression of spirits.	[3]Three to five grains will prove calmant and restorative.
Reduces temperature, dissipates heat. [4]Extreme coldness (fatal case) temperature 91 F. [5]Continuous and prolonged discharge of body heat.	[4]Tends rapidly to reinstate norma of temperature by retention. Fall of body temperature antagonized by caffeine. [5]Supports the vital powers and resists tendency to collapse.
[6]The first pathological stage of intoxication is one of vascular relaxation with vasomotor paralysis. [6]Vasomotor paralysis always present.	[6]Is tonic to vasomotor nerves. [7]Refreshes and stimulates the nervous system.
[7]The arteries are sclerotic.	[8]Is of great use in attacks of dyspnea caused by sclerosis of coronary arteries. [9]Stimulates the cerebro and cerebro-spinal system.
[8]Defective circulation in brain reacts sharply on cell nutrition.	[10]Is a powerful stimulant to the central nervous system.
[9]The heart is always deranged—hypertrophic or atrophic. Its muscle walls enfeebled. Nutrition and control diminished. Dilatation. Heart failure.	[5]Braces the nerves which govern the caliber of vessels, and so sustains the circulation. Three grains is a diuretic in cardiac dropsy. [4]A much more active heart stimulant than is usually believed.
[4]There are many unknown toxins which come from the spirits used and are formed by its actions on other substances.	[5]Increases the loss of carbon by the organism; does not restrain the loss of nitrogen.
[4]Chemical derangements of the processes of metabolism.	[11]Formula $C_8\ H_{10}\ N_4\ O_2$. Carries large amount of nitrogen. Base xanthin, found in most of the organs of the body. Xanthin thus furnished may assist in processes of metabolism.
During convalescence an intense craving for more alcohol.	[3]Caffeine seems to take the place of alcohol and to quench the desire for it.

From the above it is clear that the physiological antagonism of caffeine and alcohol has been recognized, and while at least one writer[3] has proposed

* Read at the Annual Meeting of the American Therapeutic Society at Washington, D.C., May 12, 1903.

and endeavored to popularize an effervescent solution of caffeine as a substitute for alcoholic drinks, still the one feature which has been overlooked, and which is of prime importance to the therapeutist, is the fact that caffeine administered in doses of one or two grains every one, two or three hours, will usually in twenty-four or forty-eight hours so effectually quench the thirst or craving for alcohol that most confirmed habitués will voluntarily abandon its use. This feature is well illustrated by the following cases:

Case I.—Mr. S., age twenty-five years, has been a moderate consumer of whisky for years. At short intervals he indulges to excess, the "spree" consuming from three to five days of his time. On a recent occasion, during a railroad trip, he indulged freely, and found himself on Sunday morning in a dry town, with an unquenchable thirst, and whisky to be had only on a physician's prescription. On applying to me I assured him that whisky was not necessary at all, and that a few capsules taken during the day would answer the purpose. He took 2 grains of caffeine every two hours for 4 doses. He afterward assured me that after the third dose the desire for alcohol disappeared and he made the most rapid and satisfactory recovery of which he could remember.

Case II.—Mrs. D., aged thirty years, was under observation eight years ago, at which time she was treated for an almost endless variety of nervous symptoms attending a premature atrophy of the uterus. She was absent from the city for a long while, during which time the symptoms were aggravated in spite of more or less constant treatment. She finally became addicted to the use of whisky and laudanum. When I saw her recently she was consuming one pint of whisky and from "15 to 30 cents worth of laudanum" daily. The pulse was 180 per minute; the temperature from ½° to 1° F. above normal; she complained of uncomfortable sensations in the chest and severe headaches, from which symptoms she claimed she could secure only temporary relief while fully under the combined influence of alcohol and opium. She suffered from insomnia and melancholia, and indulged in speech and acts which had brought her sanity into question among her friends. Her rapid heart action, somewhat prominent eyes, a moderately sized soft struma, a slight tremor, and her highly neurotic and erratic manner and actions made the complete diagnosis exophthalmic goiter, hysteria, alcoholism and morphinism. Dr. L. Kolipinski, who saw this case with me, suggested the use of chromium sulphate for her primary disease, as described by him at the last year's meeting of this Society. She began using one grain of caffeine every three hours with a view of overcoming the craving for alcohol, also every four hours two grains of chromium sulphate. For three days she surreptitiously consumed large amounts of whisky and gin, but on the fourth she declared she had no further desire for the narcotics, and save one short relapse has abstained from their use. During the next few days all the disturbing symptoms disappeared, the pulse rate fell to 85, temperature normal, and the patient rapidly took on the appearance of perfect health, much to the surprise of her friends. At present she is regularly employed as an attendant in an orphan asylum.

Case III.—Mr. B., sixty-five years old, a chronic drunkard, intoxication continuous. He suffers from chronic gastritis, alcoholic amaurosis, attacks of spasmodic asthma, and occasional attacks of alcoholic sensory neuritis. The gait is heavy and shuffling, speech thick, ideas extravagant. He is melancholy and constantly complaining about his ill-health. His face is turgid and sodden; eyes much congested. He has given up his business on account of these symptoms, which, in his opinion have condemned him to chronic invalidism. Caffeine in 1½ and, later, in two-grain doses removed all these symptoms speedily. He declared himself as feeling bettter, the first time he had made such a statement in a professional acquaintance of five years. On account of his age and the ignorant opposition of his family, no attempt was made to induce him to give up the use of alcohol or to explain to him the fundamental cause of his illness. While the caffeine did not succeed in displacing the alcohol in this case, still the patient was for a time perfectly sober while consuming the usual amount of whisky.

Case IV.—A woman, fifty years old, suffered with chronic gastritis of some months' duration, due to beer drinking. She was much excited in her manner, was unable to eat, had daily attacks of vomiting, was sleepless and restless at night, feared to be alone, and, all in all, was on the verge of an attack of delirium tremens. She was directed to take an abundance of liquid food, was given 1½ grains of caffeine three times daily, and ordered to stop the use of alcoholic intoxicants. Her recovery was complete in a few days.

Numbers of other cases might be cited, but the above are fair sample histories.

Caffeine has its toxicological[5] [9] [10] history, but as four grains[7] have been given hypodermically and repeated four times in a case of post-partum hemorrhage, and 4½ grains,[5] repeated 10 times in the adynamic state of typhoid fever, it would seem that there is a wide margin in which to allow for idiosyncrasies. I have not used more than two grains at one dose, and prefer the small dose at short intervals.

As might be expected, most patients under the influence of caffeine do not sleep, though some do, but their insomnia differs radically from that of alcoholism, and, so far as I have observed, does not lead on to delirium, it having been described to me as a perfectly contented, blissful condition.

In conclusion, I hope I will not be misconstrued into advocating caffeine as a specific in all cases of alcoholic toxemia to the exclusion of all other remedies and measures. However, I am strongly inclined to credit caffeine with a physiological antagonism to alcohol as clearly marked and as easily demonstrated as that existing between belladonna and opium. If this point is once established, the contention that alcoholism is a dis-

case will be abandoned and the fact that it is a toxemia must be admitted.

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A CASE OF CHRONIC LYMPHATIC LEUCEMIA WITHOUT ENLARGEMENT OF THE LYMPH NODES.

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Our knowledge of the pathology of leucemia is intimately dependent on our knowledge of the development of the different forms of white blood cells, and their relation to the blood-forming organs. In conditions such as leucemia where there is disagreement as to the origin of the disease, a case which varies from the disease type may often throw more light on the problem than one which is typical. We, therefore, venture to report the following case, which differs from the ordinary case of lymphatic leucemia in many respects.

The following is a summary of the main facts from a clinical and pathological standpoint:

Case.—Mrs. J. G., aged forty-five years; housewife. Family History.—Her father and mother are dead, of unknown causes. One of her sisters died of cancer of the liver, secondary to gall-stones. She has two sisters and one brother living and well.

Personal History.—The patient was married at twenty-one. She has had five children. Three are living and well. One died of scarlet fever, and the other of some obscure disease. She has never been ill since childhood, save with childbearing, until the onset of the present illness.

Present History.—The patient consulted Dr. Gordinier, at his office, two weeks prior to her death, with the statement that her present illness began about one year ago, with breathlessness and fatigue on exertion, together with diminution of appetite and dizziness. These symptoms have gradually increased, and have been accompanied by a gradually increasing pallor of the skin. At present there is marked dyspnea on the slightest exertion. She cannot lie recumbent, but in order to be comfortable must be propped up in bed with pillows. She has had, at no time, diarrhea or stomach disturbances of any kind. She says that she has never been jaundiced or bled from the nose, gums, mouth or rectum, and her menstruation was always normal in amount and without discomfort, up to two years ago when it ceased.

Present Condition.—She is moderately well built, weight 150 pounds. She is of a dingy yellow complexion. The conjunctivæ are pearly white, and all visible mucous membranes are exceedingly pale. There is no apparent general emaciation. The musculature is everywhere flabby, and there is soft edema of the legs, especially about the ankles and along each tibia. The pulse is rapid, easily compressed, regular, and evidently of very low tension. The arterial walls are not thickened. The respirations are somewhat hurried, 24 per minute. There are no dilated veins over the chest or abdomen. The apex beat is feeble, diffuse, and appears displaced slightly downward and outward. The area of cardiac dulness begins above at the fourth rib, and extends from the midsternal line 2½ cm. to the left of its normal position in the fifth intercostal space. There is no bulging of the precordia, thrill, or friction fremitus. At the apex, a soft, blowing murmur is heard which is conducted rather faintly to the midaxillary line. Over the aortic interspace there exists a soft systolic and a diastolic murmur, the latter being very soft and conducted a short distance over the body of the sternum, but not heard at the apex. A distinct venous hum is heard on each side of the neck. The carotids pulsate rather prominently but no murmur is heard over either of them. No double tone is heard in the femorals. There is no capillary pulse. The lungs are negative save for the physical signs of a moderate degree of emphysema. The superficial fat is well developed. The splenic dulness begins at the eighth rib in the midaxillary line and extends downward to the eleventh rib. The spleen may be palpated by thrusting the hand slightly beneath the left costal border. The liver dulness begins beneath the fifth rib and extends about 2 cm. below the free border of the ribs. The liver is easily palpated. Its lower border presents nothing abnormal. On the outer surface of the right thigh just above the knee, exists a well-defined, rather oblong, somewhat irregular scar due to an old injury. No evidence of any syphilitic lesion could be found. The stomach tympanicity was carefully mapped out after inflation, and found to occupy its normal area. The abdomen was universally tympanitic, soft, and presented no flatness in either flank. The rectum and the uterus presented nothing abnormal. There was tenderness on percussion over the lower part of the sternum and over the lower costal cartilages, as well as of the long bones of the lower extremities. There was no tenderness on percussion of the skull, or over the splenic or hepatic regions. Glandular System.—The most careful search failed to disclose the slightest enlargement of the lymphatic apparatus, either superficial or deep. The mouth, throat and larynx showed a very pale mucous membrane but no enlargement of the tonsils or follicles. The tongue was pale and coated with a slight yellowish fur. It was protruded straight and was movable in all directions. The gums were exceedingly pale and not vascular. Nervous System.—The cranial

nerves were all normal. The optic discs showed none of the characteristic changes often found in leucemia. The pupils were midwide and presented normal reactions. Hearing was acute in each ear. The patient's gait presented nothing abnormal, save that it was an effort for her to walk owing to her great weakness, and the fatigue excited thereby. The motor power seemed fairly good. There was no sensory disturbance, no patches of anesthesia, no ataxia. Both the superficial and deep reflexes were normal. She had perfect control over the organic reflexes. The muscles, though flabby, were not apparently atrophic, and were not tender on pressure. There was no tenderness of the accessible peripheral nerves. The skin was pale, not thickened, and presented no eruptions. The urine was of amber color, sp. gr. 1.022. It contained no albumin, sugar, casts or blood, but a rich deposit of uric acid.

The day before her death, all the above-mentioned subjective symptoms were greatly exaggerated and the pallor seemed much increased. There was marked dyspnea, the patient lying semirecumbent in bed, evidently suffering from intense air-hunger. There was no cyanosis. The heart was rapid. The muscular element of the first sound was very weak. The pulse was 140 and the temperature 104° F. There were numerous subcrepitant râles at the bases of the lungs posteriorly, doubtless due to beginning pulmonary edema. The tenderness over the bones was increased. Liver and splenic dulness was not changed.

The Blood.—At the time of the first visit a blood examination showed the following: Hemoglobin (Dare, Gowers), 35 per cent.; red corpuscles, 1,625,000; leucocytes, 130,000. The blood to the naked eye appeared watery, and had a whitish tinge.

A *differential count* of 1,000 leucocytes showed the following:

Polynuclears	33— 3.3	per cent.
Large mononuclears	15— 1.5	per cent.
Transitionals	9— .9	per cent.
Small and medium-sized mononuclears	940—94.0	per cent.
Eosinophiles	1— .1	per cent.
Mast cells	1— .1	per cent.
Myelocytes (neutrophilic)	1— .1	per cent.
Nucleated reds (normoblasts)	18	

The day before the patient's death the hemoglobin had fallen to 30 per cent.

Microscopic Examination of Stained Specimens.—The red corpuscles present a moderate amount of variation in size. There are a very few, if any macrocytes, but a good many microcytes are seen. A slight degree of poikilocytosis is present. The red cells show a central pallor. Nucleated reds are occasionally seen, all of the normoblast type. The leucocytes, as shown by the differential count, diverge greatly from the normal. The prevailing type of cell is a mononuclear element, resembling the small mononuclear cell of normal blood, from which, however, it differs in certain respects. This cell is about the size of the red corpuscles, though sometimes smaller and sometimes larger. It possesses a spherical nucleus surrounded by a very narrow zone of protoplasm. The nucleus is usually fairly regular, but at times shows slight flattening or indentation on one side, it stains with moderate intensity and shows a well marked nuclear network, with occasional nodular swellings, but no definite nucleoli. The protoplasm which is often more apparent on one side of the nucleus than on the other, is free from granules, and stains as a rule faintly pink with Ehrlich's triple stain. Occasionally the protoplasm is basophilic rather than acidophilic, but this is the exception. Some of these cells suggest very strongly nucleated reds, but comparison with nucleated reds in the same blood shows that they possess a much larger amount of protoplasm, staining much pinker and a more solid, more deeply staining nucleus.

A second type of leucocyte present in very much smaller numbers than the form just described was about midway in size between the small mononuclear and the normal large mononuclear of the blood. These cells possess a much larger amount of protoplasm than the first variety, the amount of protoplasm varying in different cells. The nucleus, which is quite often extra central, is spherical or ovoid as a rule, though at times flattened on one side or indented. The nucleus stains less intensely than that of the smaller cells, the chromatin network is rather coarse, and shows in many instances nodular thickening about the edge of the nucleus, resembling those seen in the ordinary plasma cell. Many of these cells show definite nucleoli. The protoplasm is free from granules and is acidophilic.

A third type of cell occasionally seen was a very large, oblong, faintly staining body devoid of granules or of nucleus, and evidently in an advanced stage of degeneration. These cells resemble the large degenerated forms described by various observers in cases of acute lymphatic leucemia. Typical polynuclears, large mononuclears and transitionals are occasionally noted. One eosinophile, one neutrophilic myelocyte, and one mast cell were observed in counting one thousand leucocytes. The blood plates appear normal in amount.

The patient died ten days after she was first seen, and the autopsy was performed ten hours after death, the weather being cool.

The anatomical diagnosis was as follows: Lymphatic leucemia with very marked changes in the bone marrow, and with practically no changes in the lymph glands. Edema and congestion of the lungs. Marked fatty degeneration of the heart muscle. Swelling of the spleen. Marked cloudy swelling of the kidneys with multiple superficial areas of necrosis (?). Small stone in the pelvis of the left kidney. Slight, chronic, passive congestion of the liver with cholelithiasis.

The following are the notes made at the

autopsy: Body 165 cm. in length; strongly built; well nourished. Marked rigor mortis. Slight lividity of the dependent parts. Surface is pale. Left leg is larger than right and edematous. Mucous membranes are extremely pale. The superficial glands are not palpable. Subcutaneous fat is moderate in amount and unusually yellow. Muscles are well developed. The peritoneal cavity is perfectly dry; both layers are smooth. The omentum is free from adhesions and contains a moderate amount of fat. The glands are not apparent. The appendix is retroperitoneal, runs upward immediately in front of the right kidney, and is transformed into a fibrous cord in which no lumen is apparent. The foramen of Winslow is open. Diaphragm—right side, fourth rib; left side, fourth space. The axillary glands of the left side are very slightly enlarged, the largest found being 15 mm. in diameter, and slightly whiter and more opaque-looking than normal. The mammary glands are normal looking. The costal cartilages are not ossified. The precordia measures 10 x 10 cm. The pericardium contains 60 or 70 c.c. of clear fluid. Two or three white nodules of connective tissue are present on the parietal pericardium. The visceral pericardium is normal.

Heart.—The right side of the heart contains fluid blood and post-mortem clots of a pinkish color, covered with an irregular gray coating. The endocardium and valves of the right side are normal. The average thickness of the right ventricle is 5 mm. The left side of the heart is almost empty, except for a clot adherent to the mitral valve. The valves on the left side are normal, endocardium also normal. The heart muscle is flabby and shows a well-marked, faded leaf appearance, especially in the papillary muscles. The coronary arteries show a few patches of early atheroma. The auricular appendages are free from clot. The foramen ovale is closed.

Lungs.—The left lung is adherent by old adhesions posteriorly and laterally over the lower lobe; is everywhere crepitant, but feels much firmer than normal. On section both lobes are slightly congested and markedly edematous. The bronchi contain frothy mucus; they appear normal. The large blood vessels contain post-mortem clots. The right lung is free from adhesions. It is crepitant throughout, and presents in every way the same appearance as the left. The bronchi and vessels are as on the other side. The bronchial glands are not enlarged but are deeply pigmented. They show no signs of tubercles.

The spleen is free from adhesions. It is much enlarged, and measures 16x10½x5½ cm. The surface is smooth. The consistency is much softer than normal. On section the pulp is increased; the Malpighian bodies are only occasionally to be made out, and are not enlarged. The trabeculæ of the spleen do not appear to be increased in amount.

The liver is free from adhesions. It is considerably enlarged, and measures 24x20x9 cm The capsule is smooth. The consistency is softer than normal. On section the centers of the lobules are slightly congested; their peripheries are pale. Scattered through the organ are a very few slightly opaque rounded nodules not larger than miliary tubercles, which suggest lymphomata.

The gall-bladder contains 63 faceted gallstones, varying in diameter from ½ to 1½ cm., of a very light specific gravity, and apparently consisting of a nucleus of bile salts surrounded by cholesterin. The left adrenal is normal in appearance, except for a post-mortem cavity.

The left kidney measures 11½x5½x4½ cm. In the apex of one of the calices is an almost black, firm calculus, 3 mm. in diameter. The capsule strips easily, leaving a pale surface. Dotted over the surface are numerous rounded opaque white areas just on the border of visibility. They do not impress one as lymphomata but rather as some form of degeneration. On section an occasional similar area is seen. The pallor of the kidney is still apparent. The cortex averages 7 mm. in width. The cortex markings are almost absent. Most of the glomeruli are pale, a few are congested. The pelvis is normal. The right adrenal shows post-mortem change.

The right kidney measures 11½x5x4½ cm. Its appearance is the same as its fellow.

The ureters and bladder are normal.

Uterus.—The external os contains one or two fresh looking clots. The vagina is normal. The glands of Naboth are enlarged, forming cysts. The uterine wall is thickened, averaging 2 cm. in thickness. The endometrium is pale and slightly thickened. The tubes are free from adhesions and normal looking. The ovaries are partly sclerotic, especially the right. The left contains a fairly fresh corpus luteum.

Rectum.—The mucous membrane is pale and the follicles are distinctly enlarged. The mesenteric lymph glands are but slightly if at all enlarged. Some of them are congested, others pale. The retroperitoneal lymph glands are not enlarged. Glands which can be definitely made out to the naked eye as hemolymph glands are not apparent. The glands in the hilum of the liver, the perigastric glands, the peripancreatic glands, the posterior mediastinal, the iliac and the inguinal glands are not enlarged, although the inguinal glands on the left side appear a little firmer than normal and are slightly opaque. The aorta shows a few patches of fibrous and fatty atheroma. The stomach is dilated. The mucous membrane is pale and covered with sticky mucus. The pancreas is perfectly normal. The bone marrow of the left femur has lost entirely its yellow appearance and is converted into lymphoid marrow. The bone marrow of the right femur is the same as that of the opposite side, of a mottled grayish-red color.

Intestines.—One or two of the Peyer's patches show a shaven beard appearance. The solitary follicles are slightly swollen just above the valve and in the large intestine.

Microscopic Examination.—The bone marrow of the femur is completely transformed into a tis-

sue resembling lymphatic tissue. Under the low power it appears as closely packed mononuclear cells separated by a fine reticulum and containing occasional blood channels, some of which are markedly dilated. With higher powers the predominating cells are mononuclear elements resembling those seen in the circulating blood. The larger number of these are about the size of a red blood cell, if anything rather larger than a red corpuscle. These cells have a rounded nucleus, staining rather darkly with hematoxylin, and with a fairly well marked, rather course, chromatin network. The chromatin network shows occasional thickening, but no definite nucleoli. The protoplasm varies in amount, but is usually scant and stains faintly with eosin. Next in number to these cells, are much larger mononuclear elements, with a rounded nucleus, often situated extracentrally, and a good deal of protoplasm. The nucleus stains a trifle more faintly than that of the smaller cells, but has the same marked chromatin network, which tends to be concentrated at the periphery of the nucleus. Definite nucleoli are present in many of these cells. The protoplasm is markedly acidophile. No granules are present in the protoplasm of either of these types of cells, which form the great mass of the elements found in the bone marrow. Besides these cells there are seen a few myelocytes, both eosinophilic and neutrophilic, and a very few bone marrow giant cells, distorted in shape, with degenerated nuclei and protoplasm. A very few polynuclears are seen. Red cells are present in rather small numbers, but nucleated reds are scarce and of the normoblast type. The dilated blood spaces contain an excess of the two types of mononuclear cells described. Quite a large number of the mononuclear cells showed evidences of direct division. Indirect division was not noted, though pictures suggesting this were occasionally seen. The red bone marrow showed a similar lymphoid condition.

The Lymph Glands.—The picture varies in different glands. In the hemolymph glands, the gland appears as if injected with leucemic blood, the sinuses being distended with red blood corpuscles and leucocytes of the types found in the circulating blood. No evidence of proliferative changes in the gland structure are apparent, though the endothelial elements proliferated in places. The ordinary lymph nodes do not all present the same appearance. In some, and especially the retroperitoneal lymph nodes, a chronic lymphadenitis of a patchy character is present, quite large areas of gland tissues being replaced by a dense connective tissue. Many of the lymph nodes, particularly the smaller ones are with difficulty to be distinguished from the bone marrow at first glance. The germinal centers have entirely disappeared, and the sinuses are so closely packed with mononuclear cells, that the absence of red cells is the only feature which rules out the bone marrow. Under the higher powers the resemblance to the lymphoid bone marrow is still quite striking for the cells composing the lymph glands are mononuclear elements of the two types predominating in the bone marrow, and in places giant cells of the bone marrow type occur in small numbers. The proper cells of the lymph gland can be distinguished from the mononuclear cells of bone marrow origin by their tinctorial characters, and show no evidence of proliferation. The endothelial cells along the trabeculæ are in places proliferated and have taken on phagocytic properties.

The Intestine.—The lymphatic apparatus of the intestine is diffuse. The follicles are not sharply defined but shade off into the submucosa. Changes similar to those seen in the lymph nodes are present in the lymphatic apparatus, and the submucosa is diffuse and infiltrated to a slight degree with mononuclear cells, similar to those seen in the blood.

The Spleen.—There is a diffuse infiltration of the pulp with mononuclear cells, so that the Malpigian corpuscles are as a rule not seen as localized collections of cells but blood into the surrounding pulp. The cells are of the types which predominate in the bone marrow and lymph glands. An occasional eosinophile myelocyte is seen, and in one section a cell resembling a bone marrow giant cell was met with. Nucleated red blood cells are also present, but in no larger proportion than they occur in the peripheral circulation. There is no evidence of increased blood destruction or of proliferation of the lymphatic apparatus. The finer trabeculæ are slightly increased in some areas, but there is no increase in the larger trabeculæ.

The Liver.—The liver cells are swollen and granular and occasional fatty cells are seen. The cells do not contain hemosiderin. The capillaries are narrowed by the swollen cells, and the blood in them shows the same excess of mononuclears seen elsewhere. Nucleated red corpuscles are no more numerous than in the circulating blood. Definite lymphomata are not present, though the portal connective tissue is more or less definitely infiltrated with mononuclear cells of the types seen in the blood.

The Kidney.—Aside from marked cloudy swelling and the usual blood changes the kidney shows nothing of importance.

The heart muscle shows a slight increase in the interstitial tissue about the larger vessels. The muscle cells are many of them vacuolated.

The voluntary muscles show a moderate number of encapsulated trichinæ. The remaining organs show nothing of importance.

At the present time writers on the pathology of leucemia may be divided into two groups. One group, in which Ehrlich is the central figure, holds that myelogenous leucemia results from disease in the bone marrow, and lymphatic leucemia from disease in the lymph glands. The other group, influenced by the views of Neumann, believes that leucemia, no matter what the blood picture may be, is always primarily a disease of the bone marrow. Pappenheim is perhaps the most prominent exponent of this group.

The view of Ehrlich, which his co-workers

Lazarus and Pinkus share with him, is markedly influenced by his ideas as to the origin of the different forms of leucocytes. He denies the presence in the bone marrow, under normal circumstances, of cells corresponding to the lymphocytes of the blood, and claims that the only non-granular mononuclear cell constantly found in the bone marrow is a cell which corresponds to the large mononuclear leucocyte. He believes that the lymphocyte originates in the lymph glands and other lymphatic tissues. It is obvious that holding these beliefs he cannot logically admit lymphatic leucemia as primarily a disease of the bone marrow. As Reed has pointed out, the conclusions of Ehrlich's school are open to the criticism, that they are based largely on studies of the morphology of the blood, and the clinical study of cases, while the study of the bone marrow has been relatively neglected.

On the other hand, the exponents of the bone marrow origin of leucemia, Pappenheim, Waltz, Reed, Bradenburg and others, have relied on their studies of the hematopoietic organs for their conception of the pathology of the disease. They, as well as other observers, have constantly found in normal bone marrow, cells which are indistinguishable from the lymphocytes of the blood, and they can therefore logically conceive of a lymphatic leucemia originating from changes in the bone marrow alone.

The case here reported resembles in all important respects similar cases reported in the last few years, particularly cases reported by Pappenheim and Reed. The clinical picture of all these cases suggests a severe anemia; in one of Pappenheim's cases and in our case it was suggestive of pernicious anemia. The course of most of the cases is acute, though in our case and one of Pappenheim's the history indicated an illness of at least a year's duration. The striking features in the pathological examination are the marked lymphoid change in the marrow of the long bones, and the absence of enlargement of the lymph nodes and lymphatic apparatus generally. The histological changes strongly indicate that the bone marrow lesion is the primary one and that the excessive escape of leucocytes into the blood takes place from the diseased marrow. The changes in the lymphatic apparatus indicate that the part played by it is a passive rather than an active one.

The points of interest in these cases lie in the blood changes, the bone marrow changes, and the relation of such cases to leucemia in general and to allied diseases.

The main interest in the blood changes relates to the character of the mononuclear cells which show such marked increase. While they resemble quite closely the normal lymphocyte, they present points of difference, the most important of these being the acidophile character of their protoplasms. Both Pappenheim and Rubenstein believe that lymphocytes and red blood corpuscles may originate from an ancestral cell which is common to both, a view which Reed supports. The latter observer suggests that the cells which predominated in her case, which are undoubtedly the same cells that predominate in our case, possibly represent such an ancestral cell. It is necessary to state however that the tinctorial behavior of the protoplasm in the mononuclear elements in our case and in Reed's does not correspond in most instances to Pappenheim's description of his ancestral cell (myelogonie), nor to Rubenstein's "mother cells," both of which are said to have faintly basophilic protoplasm. While some of the elements increased in our case have a basophilic protoplasm, others have faimly but distinctly acidophilic protoplasm. It is questionable, however, whether the possible identity of these different cell forms should be excluded merely on account of slight tinctorial differences in the protoplasm. If we accept the view that these cells represent ancestral cells, it would seem necessary to assume that for some reason these cells, which show evidences of marked activity as far as reproduction is concerned, have lost their power of developing beyond a certain point, *i.e.*, they are no longer capable of completing their cycle of existence. This is shown by the fact that both nucleated red cells and typical lymphocytes are extremely rare, both in the bone marrow and in the circulation. It is difficult to imagine why cells which show such marked evidences of proliferative activity should lose their function of differentiation, unless it is that their rapid extrusion into the blood current places them in a medium unfavorable for their further development. If such a theory of arrested development of an ancestral, or, as Reed calls it, a mother cell, is tenable, it would explain both the anemia and the lack of typical lymphocytes.

On the other hand, it cannot be denied that these cells may be merely an early stage of the ordinary lymphocyte such as is not found in the peripheral circulation under normal circumstances. The assumption that they represent an ancestral cell is strongly suggested by their close resemblance to lymphocytes, their acidophilic protoplasm, and their resemblance to nucleated red cells, but, as Reed very properly says, the staining reaction of cell protoplasm is a slight and variable criterion on which to base cell relationships, and we may add that this is especially so when we are dealing with the ordinary acid dyes for which the protoplasm of so many varieties of cell possess an affinity.

The larger mononuclear elements described in this case cannot be sharply separated from the group just discussed, inasmuch as their size and certain slight differences in their nuclei seem insufficient grounds for placing them in a separate class; furthermore, cells are seen in the blood which seem to connect these two groups.

The change in the bone marrow in this case, as in similar cases reported, would seem to be best classed as a hyperplasia. This would also seem to be the lesion in splenomyelogenous leucemia and in leucocytosis, the essential difference in the changes in these diseases being a qualitative one.

Why in one instance the hyperplasia should affect all the elements of the bone marrow, as is the case in myelocitic leucemia, and in another only the mononuclear elements should be involved as in lymphoid leucemia it is difficult to state. The resemblance of leucemia to an infectious process and the known action of chemotaxis in infectious leucocytosis suggests, as Reed has observed, that leucemia is due to the action of some chemotactic agent, or agents, which by withdrawing certain varieties of leucocytes from the bone marrow cause a compensatory hyperplasia to replace the elements of the type withdrawn.

This hypothesis necessarily assumes the existence of different chemotactic agents specific for the different types of leucocytes, an assumption which seems to us perfectly justifiable if we compare leucemia with infectious processes. As is well known not all of the chemotactic substances produced in infectious diseases attract the same varieties of leucocytes. That bone marrow hyperplasia per se is incapable of producing the blood picture of leucemia is shown by a number of recorded cases in which this condition existed without the clinical picture of leucemia.

Judging from this case and similar ones in the literature, the changes in the lymphatic apparatus would seem to be entirely secondary, and in the nature of an infiltration with cells derived from the diseased bone marrow, at times associated with a simple hyperplasia. As has already been stated there was no evidence in this case, or in similar cases in the literature, of any active formation of mononuclear cells in the lymphatic apparatus, and nothing to lead one to believe that the increase of the mononuclear cells in the blood was due to changes in the lymphatic tissues.

The relation of cases of lymphatic leucemia to so-called pseudoleucemia has been widely discussed, both by those who uphold the lymph gland origin of lymphatic leucemia and those who believe in its origin from bone marrow changes. As far as one can judge from the literature it has been taken for granted, almost universally, that pseudoleucemia differs from lymphatic leucemia merely in the absence of the blood changes, the histological changes in the organs being the same As Reed points out the term pseudoleucemia has been used in a very loose fashion, so that it is quite probable that a number of diseases have been grouped under this head. As far as typical Hodgkin's disease is concerned we now know, from Reed's very careful studies, that it presents perfectly definite histological lesions, which are entirely different from the lesions of lymphatic leucemia, so that the possibility of any relationship between the two diseases is practically excluded. As long as our knowledge of the various conditions classed under the head of pseudoleucemia (Hodgkin's disease excepted) is so imperfect, it would seem impracticable to intelligently discuss the relationship of these cases to true leucemia.

The possible relation of cases of this sort to pernicious anemia was suggested by the clinical appearance and history of our patient, as was the case in one of Pappenheim's patients. The possibility that a preleucemic pernicious anemia can occur in these cases is discussed by Pappenheim in connection with a case reported by Körmöczi in which leucemia was preceded by pernicious anemia. We can see no reason why the two diseases should not follow each other at times merely as a matter of coincidence, but that any causal relationship should exist between the two diseases seems unlikely. In our case, and in the other cases described in the literature, the changes in the spleen, liver, and hemolymph glands which are characteristic of pernicious anemia, were not present. As Pappenheim points out, in leucemia we are dealing with a primary specific bone-marrow disease leading to the excessive formation of certain elements of the blood, while in pernicious anemia we are dealing with a non-specific secondary change of a compensatory character.

Finally, we wish to discuss our conclusions as to the deductions to be made from these cases. As far as myelocytic leucemia is concerned there is at present practically a unanimity of opinion that it is due to disease of the bone marrow. As regards lymphatic leucemia, as already stated, the school of Ehrlich regards it as always primarily a disease of the lymph glands, while the school of Neumann regards it as always primarily a disease of the bone marrow. We believe that both schools take extreme views. There is good evidence, in our opinion, that cells of the lymphatic type are formed in normal adults, both in the lymphatic apparatus and the bone marrow. Theoretically, therefore, it should be possible to have lymphatic leucemia as a result of disease of the lymphatic apparatus, or of the bone marrow, or of both. In the recent study of the blood and organs of a case of lymphatic leucemia of the ordinary type, we observed that the increase in the leucocytes was for the most part an increase in typical lymphocytes, whereas in the case without enlargement of the lymph glands the increase in leucocytes was in cells differing from the ordinary lymphocyte, as we have described. On the other hand in the case without enlargement of the glands there was no evidence of increase in the proper cells of the lymphatic apparatus, while in the typical case of lymphocytic leucemia numerous cells undergoing direct division were to be made out in the lymph glands. We would therefore suggest that while myelocytic leucemia is invariably a disease of the bone marrow, lymphocytic leucemia may be a disease either of the lymphatic apparatus or the bone marrow, or both, and we would further express the belief that specific differences exist between the blood picture of the different forms.

New Private Pavilion at St. Luke's.—Thanks to the munificence of an unknown donor, St. Luke's Hospital is to have a new private patients' pavilion, thoroughly equipped. It is to be modern in every respect and will prove a great addition to the hospital.

MEDICAL PROGRESS.

MEDICINE.

Pernicious Anemia.—There is a spreading tendency to look upon idiopathic pernicious anemia as secondary to chronic intestinal intoxication and attempts have not been wanting to isolate some poison from intestinal contents, which might have a deleterious effect upon the red blood cells. Experiments of E. Bloch (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 3 and 4) in this direction were, however, all negative. Fecal extracts injected into animals either caused a rapid death or temporary illness with but slight anemia. Estimation of indican and ether-sulf. acids sometimes gave normal, sometimes slightly increased figures, such as may occur in any healthy organism. A determination of the toxicity of urine by injecting it into animals led to no results and a special toxicity of the blood serum could not be proven. The infectious stomatitis which is regarded by Hunter as a portal of entry for certain poisons, is nothing but a result of the disease, secondary to necrosis from submucous hemorrhages. The facts that nitrogenous metabolism often moves within normal limits, that full diet often agrees well and that a diet directed against undue fermentation does not necessarily bring about improvement, also speak against an enteric origin. Atrophy of the gastric and intestinal glands cannot be held accountable for the disease since it is often found post mortem in its most advanced form in infants who never gave symptoms of pernicious anemia during life. Intoxication due to the absence of internal secretion is also unlikely, since the blood was not seriously altered in cases with diseased ductless glands. Certain chemical substances were injected in the hope of finding some clue as to the nature of the toxin, if such exists, but phenylhydrazine and other well-known blood-poisons, while inducing a severe and often fatal anemia when injected in large doses, will hardly cause marked changes in small, repeated amounts, since a certain tolerance is soon established. In a few published cases, a small malignant tumor, generally in the stomach, was found but there is no reason to assume that this stands in causative relation to the anemia, even where it causes small, repeated hemorrhages. There are also cases on record where pernicious anemia appeared in patients suffering from severe tuberculosis but there can be no connection since the anemia improved without arsenic while the lung condition progressed steadily. Likewise there is no reason to assume that syphilis or malaria form an etiological factor. It is probable that all these infections and intoxications are only indirectly guilty, that by acting upon a hematopoietic system with individual, non-inherited lack of resistance they may sometimes assist in bringing about the anemia without being actually the cause of it. It is, however, possible that extrinsic causes may occasionally be so powerful that a special disposition is not required but this is certainly very rare and only applies to tumors of the bone-marrow. Sometimes lymphatic leucemia develops here after pernicious anemia, which can be explained by irritation of the new-formed cells upon the lymphatic tissue. That a disposition is necessary to set up a pernicious anemia is demonstrated by the case of a woman who suffered for years from a hemorrhoidal hemorrhage and besides was infected with bothriocephali and yet only developed a severe secondary anemia. In another case a combination of severe, chronic malaria, syphilis and tuberculosis had the same effect. According to some, constitutional weakness of the hematopoietic system is coupled with other anatomical peculiarities such as relative small size of heart and liver, voluminous lungs, narrow arteries and short small intestines, but Bloch's cases did not show these variations in size. It would be desirable to determine the lack of resistance on part of the red cells by some clinical method, before the disease has so fully developed as to be easily diagnosed, but we are as yet unable to do this.

Posttyphoid Sepsis.—Typhoid fever, as a disease, regularly lasts for four weeks with periods of improvement at the end of the second and third weeks. These periods of improvement may be permanent so that we have two-week, three-week and four-week typhoids. It is not generally recognized that if the patient has fever after these periods that it is usually not typhoid, unless there is a true relapse. F. Delafield (Med. Rec., Sept. 12, 1903) lays particular stress upon the fact that when a person suffers from a bacterial infection like typhoid that the infection itself does not constitute the disease. These must go together—the bacterial infection, the intestinal lesions and the various morbid changes. When the disease has run its course, there may be infections of various parts of the body with typhoid bacilli or pyogenic bacteria but they are not typhoid fever. The true relapses which are really fresh attacks of typhoid with the regular features of the original attack, must first be distinguished. The interval between the end of the original attack and the relapse is from three to twenty-five days. The relapse lasts from seven to thirty-nine days. A second relapse is comparatively rare. The posttyphoid fevers which are not typhoid fever, may be divided into three classes: (1) The ordinary moderate rises of temperature only lasting a few hours and not accompanied with symptoms. They cause no harm and the only important thing about them is to recognize that they are of no importance. (2) The posttyphoid fevers, which are of real importance, but yet do not make the patient very ill and are not fatal. The rise of temperature may be continuous with the typhoid temperature or there may be an interval of several days of normal temperature before the posttyphoid fever begins. The forenoon temperatures run close to normal but in the afternoon the fever may be 101° to 103° F. with occasional jumps to 104° or 105° F. Chills may accompany the high fever, but there is no delirium or sleeplessness and the tongue is moist and clean. There is no eruption, no tympanitis, no diarrhea and the patients are hungry. If they are not fed, they may have alarming attacks of heart failure. It is very interesting in these patients, if they are fed and taken out of bed, to see how they steadily gain flesh and strength in spite of the fever. (3) Much more important are the severe and long-continued posttyphoid fevers which may terminate fatally. They occur regularly after the full course of typhoid and may be continuous with or overlap the primary course. The temperature is moderate in the morning, running up in the afternoon. It is noticeable that these septic fevers are not controlled by baths, as is the typhoid temperature, but they run up and down quite independent of the baths. The patients look septic, may be dull but not actively delirious, the tongue is dry and there may be nausea and vomiting but there is some desire for food. There is rapid loss of flesh and strength, so that the condition may be alarming. A few autopsies have shown nothing but sepsis and starvation as a cause of death. Some of them improve on food alone but most of them show no real convalescence till they are gotten out of bed. It requires a great deal of courage to get a man out of bed who is apparently dying, but it seems to be the only way of saving the lives of the bad cases. At the end of a regular typhoid course, therefore, a new infection may appear which resembles a streptococcus infection and which can usually be distinguished from the typhoid fever. For this condition the best treatment

is food and getting the patient out of bed and in the air.

Cause of Muscle Disturbance in Thomsen's Disease.—P. Jensen (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 3 and 4) believes that the peculiar sluggish relaxation of Thomsen's disease is undoubtedly due to pathological changes in the muscle itself, but certain symptoms such as the slight contractions after applying induced currents may depend upon alterations in the nervous system, particularly in the nerve-end organs. Participation of the central nervous system is also probable on account of the small number of innervations possible during a given time. The much-prolonged descending curve of the muscle contraction indicates that either compensating assimilation is faulty, or the removal of products of dissimilation (carbonic and lactic acids, xanthin bodies) is more sluggish than normally. Assimilation is increased by warmth and this may explain why a myotonic muscle, after a number of contractions, will register a curve more nearly normal, since the previous contractions have liberated a certain amount of heat. Here the contractile fibrils would be at fault or else the sarcoplasm, which must be looked upon as the reservoir for oxygen and other substances, cannot give these up with sufficient rapidity. Less active dissimilation, if present, would also depend upon changes in the sarcoplasm. The abnormality of a myotonic muscle is probably chemical and physical and cannot be explained by histological examination. In searching for an effective drug, Jensen found that testicular extract shortens the period of relaxation considerably, but only for a short time. Even increasing doses will soon lose their effect. Tablets of thyroid extract had the same effect.

SURGERY.

Mugraï's Method for the Radical Cure of Inguinal Hernia.—The advantages of the leading methods of treating inguinal hernia are discussed by P. BÉGOUIN (Jour. de Méd. de Bordeaux, Sept. 6, 1903) and a comparison drawn between Postemski's and Mugraï's modification of Bassini's method of restoring the wall after the radical treatment of the hernia. Postemski's method has for its object the obliteration of one orifice; to accomplish which he first restores the posterior wall of the inguinal canal as does Bassini, but instead of allowing the cord to fall into its normal position and reconstructing the anterior wall in front of it after the latter's method, he has the cord held up and closes the anterior wall also; the cord thus passing through the internal ring only and then being allowed to lie between the anterior wall and the skin. Mugraï reverses this operation by carrying the cord behind the entire inguinal canal, closing both its walls in front of the cord and allowing the latter to make its egress through the external ring. To this method the author gives the preference upon the ground that it obliterates the weaker point—the internal ring—at which recurrence most frequently occurs after operation, and carries the cord through an orifice surrounded by the most resistant tissues, namely: the crural arch, Colle's ligament, the conjoined tendon and the internal pillar.

Surgical Treatment of Colitis.—Chronic colitis is such an unsatisfactory condition to treat medically when the whole colon is involved that the benefits of surgical interference to enable thorough irrigation have been fully realized and taken advantage of in many instances. The creation of a complete artificial anus, however, causes the patient so much annoyance and subsequently condemns him to such a severe operation when his colitis has been cured that few practitioners are willing that their patients shall undergo the additional risks. C. L. GIBSON (Med. Rec., Sept. 12, 1903) has devised a plan which simplifies the dangers of the original operation and avoids the necessity of resorting to further interference to close the artificial opening. A small intermuscular incision is made over the caput coli. Then reproducing the technic of the Kader gastrostomy operation, a catheter is introduced into the bowels through an opening just large enough to admit it. By using two tiers of sutures, the tube is infolded into the cecal wall, absolutely guaranteeing against any breakage, and the bowel is finally secured to the abdominal wall. Irrigations may be begun at once but it is best to wait forty-eight hours. After the tube has been in place one week it is removed, when the essential feature, the artificial valve becomes operative, for so soon as the tube is removed the infolded cone of the intestinal wall prevents absolutely the escape of the intestinal contents. After ten days the patient may leave his bed, no dressings are necessary and the catheter is inserted only when irrigations are desired. To obtain permanent closure of the fistula, it is only necessary to discontinue the treatment, for by omitting to pass the catheter, after a few days, the valvular infolding of the walls becomes permanent and the patient's surgical condition is at an end. Irrigations with saline solutions followed by gradually increasing strengths of silver nitrate have proven very beneficial. The advantages claimed for this operation are that it is devoid of every disagreeable feature of an artificial anus and calls for only a short confinement in bed, after which the patient himself can carry out the treatment and a change of climate is possible. The intermuscular operation reduces the risk of subsequent hernia and a prompt closure of the fistula is certain and spontaneous.

Thrombosis and Embolism of the Mesenteric Vessels.—Among the numerous varieties of intestinal obstruction, that due to an interference with the circulation in the larger abdominal vessels, has lately received renewed interest. The rarity of this condition and the uncertainty regarding the symptoms and diagnosis, is shown in a recent article by C. FALKENBURG (Archiv f. klin. Chir., Vol. 70, No. 4). He reports four undoubted cases and from their study draws a few conclusions. The age of the patients varied from thirty to sixty-one years. In one there was a previous history of appendicitis, in another chronic cardiac disease, in the third a cirrhosis of the liver, and in the last a general arterial sclerosis with gangrene of the lower extremities. All the cases ended fatally and the autopsies showed thrombosis of the mesenteric veins, causing an extensive hemorrhagic infarction of the gut, with a peritonitis involving that part of the abdominal cavity in which the affected coils of gut were lying. Emboli were also found in other abdominal organs. The symptom complex of these cases does not afford a single instance of what might have been considered an exclusive sign, pointing to the lesion in question. Common to all the cases were the suddenness of the attack, the severe initial abdominal cramps and the signs of intestinal obstruction. Hemorrhage from the intestines has usually been considered by others as having an important bearing on the diagnosis, but in the author's cases no external evidences were observed although at the autopsies, it was proven to have been present. The clinical picture is that of more or less acute intestinal occlusion, which is quickly followed by symptoms of a peritonitis. Invagination is probably the form of obstruction which is most closely simulated or that due to constriction by bands. The age as before stated is perhaps the only criterion in excluding invagination. The results of operative interference are as a rule unfavorable. An exploratory laparotomy may be done and if the gangrenous intestine is limited in extent, resection may be attempted.

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THE SEQUELÆ OF INFECTIONS AND PROPHYLAXIS.

TIME was scarcely more than a generation ago, when it was almost the custom to consider it not a very serious concern if the children, of families in which infectious diseases existed, were exposed to the infection, since it was said that it would probably be a saving of time and of bother in nursing them if they all came down at about the same time. Many people can still remember that they were allowed even to sleep with those suffering from contagious diseases with the idea that it would be better for them to have the disease over when they were young, since it was practically inevitable that they should suffer from it at some time or other.

With reference to the more serious diseases, scarlet fever and diphtheria, this state of mind is no longer usual. With regard to the milder ones it has not entirely passed away. Undoubtedly, however, even at the present time, there is not sufficient realization of the dangers involved in contagious diseases, or still more careful precautions would be taken than are at present the rule, to have other members of the family taken out of the danger of infection.

Many of the infectious diseases that are themselves not so likely to prove fatal, not infrequently have sequelæ that make the after-life of the patient much more liable to suffering and increase the tendency to early demise than would be the case without their ravages. It is evidently the duty of physicians to make this point clearer to the public generally in order that the dangers from such sequelæ may not be incurred so frequently as is now the case. For instance, even so mild an infection as measles is not infrequently followed by a distinct tendency to the development of tuberculosis of the lungs. There are good authorities, especially among the best French medical clinicians, who insist that consumption is nearly always, in families in which children have not been exposed to contagion, a sequela of measles and due to the lowering of the resistive vitality of the infectious process upon the bronchial mucous membranes. Not infrequently, too, measles has its effect upon the kidneys and thus proves to be one of the sources of the ever-increasing death-rate from nephritis, which is one of the most serious problems in the premature mortality of adults in these modern days.

A new motive for the avoidance, as far as possible, of what used to be considered the almost inevitable infection of the digestive tract in very young children, now exists in the fact that many pathologists are prone to attribute the beginnings of the pathological conditions which eventually result in attacks of chronic appendicitis as due to sequelæ of intestinal infectious processes. It is very clear that the strictures which form in the appendix are not the result of inflammatory changes going on for a few days, or a few weeks, or even a few months. It takes many years for a stricture of the urethra to form and a stricture of the appendix does not take less time, so that very probably the severe enterocolitises of early childhood and infancy are responsible for the beginning of the chronic inflammatory condition. There is more than a suspicion in the minds of many authoritative pathologists that even so important a condition as cirrhosis of the liver is the result not of alcohol alone, but of the absorption of the toxins of infectious processes in the intestinal tract.

It is now generally recognized that gall-stones are largely the result of microbic activity. Their formation would seem to be dependent on a biological protective process not unlike that which causes the formation of pearls in the oyster. The bacteria present become surrounded by a coating of bile salts deposited apparently with the purpose of segregating these organisms and prevent-

ing their action upon the biliary mucous membrane. The most frequent forms of bacteria that occur in gall-stones are the *Bacillus coli communis* and the bacillus of typhoid fever. They represent new sequela of infection which must constitute another and weighty motive for the avoidance of gastro-intestinal affections of this kind.

As the development of the diseases of the pancreas in recent years has shown that it is the presence of gall-stones blocking the common duct at the ampulla of Vater, yet allowing a patulous canal to exist which connects the biliary and pancreatic ducts that is probably the first cause for many affections of the pancreas and notably for the acute pancreatitis that so often proves fatal, as also very probably for the chronic sclerosing pancreatitis whose significance has only been realized in recent years, it is very clear that there are new reasons for the insistence on minute precautions to prevent the spread of these infectious diseases, apart from the direct mortality which they may cause.

In a word, many of the serious ailments of later life owe their initial step to the fact that microbic infections, even though they may seem comparatively trivial in their pathogeneity, or may have lost much of their fatality, are still capable of producing serious, progressive and eventually even fatal sequelæ as the result of their presence. This must make the physician realize the importance of insisting on the most careful enforcement of prophylactic precautions. In families particularly, other children must be protected and the submission to considerable inconvenience advised, even at a time when exposure already seems to have occurred in order to favor all possible avoidance of such infectious diseases. We hear less in recent years of the "ordinary diseases of childhood," as if these were more or less unavoidable incidents of ordinary child life. It is possible, though it will of course be very difficult to eradicate most of the infectious diseases in civilized communities, yet this must be the ideal toward which the medical profession itself must aim and must endeavor to lead the public. Art is as long and time as fleety as when Hippocrates uttered the maxim, yet the outlook for the lessening of danger from infectious disease is now brighter than ever.

EUTHANASIA.

It was a source of not a little surprise to the members of the New York State Medical Association, at their banquet on Wednesday evening of last week, to have an invited guest of the clerical profession take up the subject of Euthanasia and discuss as an advocate the question of terminating the sufferings of incurable patients by deliberately facilitating their progress to an easy death.

This question has been frequently discussed by physicians among themselves, but the advocates have usually been those who have distinct tendencies to the utterance of erratic or exaggerated opinion. To have a member of the clerical profession proclaim the justifiability of shortening life in hopeless cases, where the patient is suffering uselessly, is so entirely contrary to what is generally expected in this matter, as necessarily to have attracted no little attention from the secular press.

Of course the Reverend Mr. Wright surrounded his advocacy of the justification of euthanasia with many and severe conditions. He assured the physicians that he appreciated the practical difficulties inevitable in the application of such teaching but considered that this advance in practical ethics was not entirely beyond the bounds of possibility in the very near future. "Of course it would be necessary to have the advice and approval of men of the highest scientific attainment," he added and further suggested "that the city might be divided into districts and every application for permission to shorten life for supposedly good reasons should be considered most carefully not merely by physicians but by some eminent clergymen selected for the purpose." And besides, there should be the consent of relatives as well as the natural request of the patient himself. With all the conditions fulfilled, however, in cases in which the prolongation of life is simply the prolongation of hopeless agony, it seemed to him that the adoption of the practical principle of anticipating the inevitable end in some painless way "would be a step forward in civilization and a step further away from barbarism."

It is doubtful if all the conditions suggested by Mr. Wright could ever be fulfilled in an individual case. Even if they were, his suggestion seems to lack a basis in essential morality. The right to take life does not belong to any man or set of men, though it does belong to government under certain conditions. As physicians well know practically no case is so hopeless but that a turn for the better may surprise the attending physician with an unexpected recovery. Every medical practitioner of any wide experience has had cases in which an inevitably fatal termination

seemed beyond all doubt, yet the patients survived not only to tell the tale of their doctors having given them up but often to outlive their physicians. Medicine is still an art and long ago Hippocrates, the great Greek Father of Medicine said "Art is long and life is short and experience is fallacious" and when he came to write his chapter on the prognosis of disease he said "This is the most difficult problem in all medicine." It still remains so.

As a matter of fact there are not many cases in which patients are as ready as is sometimes presumed to go out of existence. Young patients are apt to be somewhat impatient and demand freedom from pain at any cost but those who are tired of life and express their readiness for death, especially among the old and apparently most hopeless cases, yet have a hankering after existence that makes them cling to it in spite of pains and ills. The physician is often reminded of the old fable of Æsop, in which the old man calls loudly upon death to come to his rescue when he can no longer carry the burden of wood gathered for his winter fires, yet when death makes his appearance at his invitation, and demands what he called him for, he says that he called on him only to have him help carry his load of wood.

In the course of duty every physician finds it necessary at times to employ remedies for the sedation of pain, though he is sure that the employment of these remedies may lessen the patient's chances of recovery. Under the circumstances, however, he is conscious that the continuance of severe pain itself is quite as apt to abbreviate life as the remedies that he employs. It is the choice of two evils, and he deliberately chooses that one which is most humane and saves the patient from suffering. There is no doubt at all of the morality of the physician's action under the given conditions. To this degree at least, euthanasia is not a mere hypothetical theory, but a very humane practice with regard to which there need be no harassing hesitation. Physicians generally would not like to assume more responsibility than this and in the present state of our knowledge, or uncertainty, as regards the individual prognosis in disease, there is no desire to assume further burdens of decision.

X-RAYS IN SPINAL CORD LESIONS.

Yet another use has been found for the Roentgen rays. In an inspiring article by E. von Leyden and E. Grumach (*Archiv für Psychiatrie und Nervenkrankheiten*, 37. Bd. 1. Heft) the authors propose their use for the diagnosing of diseases of the spinal column and of the cord and thus further the treatment of complicated spinal conditions.

By the series of illustrations appended to the article it is particularly noteworthy how comparatively transparent the cord is. The authors refer to thirty cases in which the Roentgen rays were used for diagnosis. In twelve the rays confirmed the previous diagnosis but for the other eighteen patients a new or at least a larger picture was presented to view. In ten of these patients the disorder of the spinal cord was secondary to an affection of the bony column. In one of these there was found compression of the spinal cord in the dorsal region by a tuberculous bony process.

As a diagnosis of myelitis of syphilitic origin had been made in this case and the antisyphilitic treatment begun the change in treatment brought about by the change in diagnosis was both instructive to the physician and beneficial to the patient. The history of this case is of interest and was briefly as follows: A twenty-six year old woman, married, in previous good health, began to suffer a year and a half previously with tingling and increasing weakness in both legs. Six months later there developed twitching and clonic spasms of both legs and at times incontinence of urine. The physical examination showed total spastic paralysis in both legs in a well-nourished woman; at times clonic contractions in the hip and knee-joint on both sides. The sensibility was undisturbed. On both sides knee and foot clonus was present and Babinski was positive. Incontinence of urine also present. At no place on the spinal column was there pain either subjectively or on firm pressure. The absence of pain on pressure over the vertical axis led to an error in diagnosis, as the Roentgen rays showed a curious disturbance of bone with attempts at callous formation.

In another case there was compression of the dorsal cord. The diagnosis had been made of tuberculous spondylosis with subsequent compression of the cord. Two cases were diagnosed as spondylosis ossificans, or spondylosis rhizomelique, as some prefer to call it. Two cases were tumors; one a carcinoma, the other a sarcoma. Two others were myelitis of the cervical region from fracture, and the last of the series was one in which a diagnosis of bulbar paralysis had been made and a depression localized to the third and fourth cervical spinal process could be made out, but the application of the Roentgen rays showed clearly a disturbance of the third and fourth cer-

vical vertebræ. A glance at the eight cases in which affections of the nervous structure was primary shows seven diagnosed as osteoporosis by the Roentgen rays and one as osteoarthropathy. Proper treatment was at once begun in all of these cases and later exposure to the rays showed reduction of the bony formation and a consequent gain in health on the part of the patient.

We are perhaps not looking too far afield when we say the time has almost come when the neurologist will not be satisfied with his examination of the spinal column unless there be added Roentgen ray pictures of the part in all its details.

ECHOES AND NEWS.

NEW YORK.

New Surgical Assistants at St. Luke's.—It is reported that the Surgeons at St. Luke's are to have assistants who will not be members of the regular staff.

New Pharmacy Laboratory at Columbia.—The new pharmacy laboratory at the P. & S. is now in active operation. The second-year students are busy compounding a large number of the regular pharmacopœial galenicals. From the interest manifested by the students, the new course is very much appreciated.

Promotions in Columbia's Medical Faculty.—The medical faculty at the College of Physicians and Surgeons has just elected Dr. Walter B. James of the Faculty of Medicine as its second representative in the Columbia University Council. Dr. James succeeded Dr. Delafield as Professor of the Practice of Medicine in 1902. At the same meeting of the faculty, President Butler's nomination of Dr. John G. Curtis as Acting Dean of the Faculty of Medicine was confirmed.

Columbia Needs a Hospital.—Columbia authorities are advocating a proposition for the acquisition of a university hospital, or a hospital under university control, where clinical instruction and the section teaching at the bedside could be carried on under the most favorable conditions, and where every facility for research would be at hand. If there is no other way than for the university to build and maintain such a hospital, it is estimated that a capital sum of fully $2,000,000 must be raised. It is held to be vitally important that each student should see, examine, and watch the process of disease as it goes on in the patient, should study the effects of remedies as they appear to act upon the patient, and should study ill men rather than illness. The professors of medicine at Columbia hold that the individual variations in many diseases are only to be learned from direct observation of those who are suffering. The Vanderbilt Clinic affords an ample opportunity for the study of those larger forms of disease which do not confine a patient to bed. About 150,000 visits are made annually by such patients. At present during their third and fourth years the students are assigned in small sections of 12 to 16 each to the various departments in turn, and are taught the special methods of examination and treatment by direct contact with each patient. But there are more serious types of disease which can be taught only at the bedside in the hospital. For hospital privileges the university depends largely on the good-will of the trustees of private institutions. "In the new curriculum," President Butler says, "Our present hospital facilities are made use of to the full limit of our privileges, but the need of a university hospital in which research could be carried on, and in which we could assign students to resident positions as junior assistants and so give them a wider experience than can at present be obtained is keenly felt by the Faculty."

The Question of Euthanasia.—A well-known divine of this city has created quite a sensation (among the newspapers, at least) by asserting that it is not only a mercy but a duty to put all incurables out of misery through painless execution. The daily press has taken the question up and no end of editorials are forthcoming to show cause why such a plan is or is not feasible and desirable. Such eminent men as Dr. Roosa, Dr. Jacobi, Dr. Flint, and Dr. Delafield have openly declaimed against the idea and they have said all that is necessary to show how utterly impracticable it is. The part of the speech that set the brains of the revolutionists in motion, was as follows:

"I appreciate the practical difficulties in the way of the application of the doctrine, but it seems to me that it is not beyond the bounds of possibility. Of course it would be necessary to have the advice and approval of men of the highest scientific attainment. The city might be divided into districts, and every application should be considered most carefully, not merely by physicians, but by some eminent clergymen selected for the purpose. And, of course, there should be the consent of relatives and the consent, even the request, of the patient himself."

We can only add that "Murder as a fine art" can safely be left in the hands of the military and of executioners under the law. The tortures of disease are not of human origin and cannot be relieved by inhuman annihilation of their victims.

Manhattan Dermatological Society.—A regular monthly meeting of the Manhattan Dermatological Society was held on October 2, 1903, Dr. L. Weiss presiding. Dr. C. A. Kinch presents a case of cretinism in a male child two years and nine months old; when first seen two years ago had bulging eyes with convergent squint, prominent forehead, small mouth and chin, expressionless countenance; inability to raise its head or use its limbs; bowels constipated. Thyroid treatment began with eight-tenth grain and gradually increased by one-tenth grain for each month. At the age of 1½ years, child began to walk and at two years, to talk.

Dr. Abrahams commented upon the slow progress made; under thyroid improvement is usually rapid and progressive. Dr. J. Sobel described symptoms and differential diagnosis between cretinism and a Mongolian idiot.

Dr. W. S. Gottheil presented a woman who had an eruption on the forearm of three years' and a lesion on the foot of one year's duration, which resembled lupus erythematosus. At present a diagnosis of lichen planus cornens is made owing to the corneous, hard, flat papules seen on foot. A patch on shoulder looks like a hypertrophied scar, or possibly a pigmented nevus. Dr. Sobel termed the process on the foot a keratosis; that on the

wrist probably lichen. Dr. E. L. Cocks suspects syphilis. Dr. Oberndorfer would exclude syphilis; lesion on foot he termed lichen corneus, on the wrist a lupus. Dr. L. Weiss called the wrist lesion lupus; on the foot, callosities.

Dr. E. L. Cocks presents the following case: A woman of fifty-eight years was seen in April, 1903. She gave a history of rheumatism; at that time numerous bright red papules, and macules were seen on shoulders, arms and below the knees; one month later patches had faded somewhat in center and the appearance suggested erythema annulare; case then diagnosed as erythema multiforme. On June 4 patient had a chill with rise of temperature (101° F.), pains in the joints and the entire body covered with dark-red pea-sized papules, capped with a minute vesicle, presenting the picture of a dermatitis herpetiformis. The vesicles gradually increased to bullæ and some attained the size of an English walnut; friction on the skin would produce a blister in a few minutes. A second attack of erythematous patches followed by bullous eruption occurred about July 1, accompanied by arthritic pains. The erythematous lesions are now nearly gone, but many bullous lesions are still present. Recurrent attacks show themselves every now and then, but the attacks are less severe. Dr. Cocks presents this case as a possible connecting link between an erythema multiforme and a dermatitis herpetiformis. The subjective symptoms and the objective signs were those of the former, while the present lesions are those of the latter. Dr. Abrahams believed this to be a case, as described by Dr. Cox; if the present lesions were of three or more months' duration he would term the condition dermatitis herpetiformis. Dr. Gottheil favored the latter diagnosis owing to the history and the tendency to recurrence in successive crops. Dr. L. Weiss coincided with Dr. Cocks; the presence of a few vesicles on the uvula made him think of pemphigus; and the intense burning and itching (subjective symptoms) conveyed to him the condition pemphigus pruriginosus. Dr. Cocks outlined his method of treatment and claimed best results with salicin 20 gr. t.i.d. and tr. cannabis indica 10 to 30 gtts. for the pruritis.

Dr. I. P. Oberndorfer showed a man with a single patch of redness covered with dry thick scales over right elbow; patch circular and clear in the center; it began as a papule and spread to present dimensions—about a 50-cent piece. It was regarded as an annular psoriasis with clearing center.

Dr. Geyser presented a young woman of eighteen years with acne indurata facea of four years' duration. The usual therapeutic measures afforded only temporary relief. In the hope that electricity might cure the patient he intends to use a high-frequency current in preference to radiotherapy; the former can be applied directly, produces no pain nor dermatitis.

Dr. Gottheil showed the following photographs: Mycosis fungoides, chancre of lip, gumma (lower limb), leucoderma syphilitica, pemphigus "hystericus;" the latter was in a female patient with gastro-intestinal crises and marked neurotic symptoms, with the development of bullous lesions.

The Economic Aspect of Sanitation.—The New York *Times*, speaking editorially, comments on the efficiency of the New York Department of Health as follows: "In his letter accepting renomination from the Citizens' Union Mayor Low made the following significant statements concerning the public health of New York and the efficient work of the Health Department under his administration: The Health Department has cut down the death rate from 20 per thousand in 1901 to 18.75 per thousand in 1902, and the returns for the first eight months of this year indicate a rate of only 18 for 1903. As compared with 1901, this means for 1903 a saving of over 7,000 lives. It has virtually stamped out smallpox, which at the beginning of 1902 was raging in New York and other American cities. During the first six months of 1903 there were only 26 cases of smallpox in New York, despite its large population. In Chicago, during the same interval, there were 310 cases, and in Philadelphia 691 cases. It has vigorously fought eye disease and every form of contagion among the school children, and it has provided a system of home nursing for children shut out of school on account of illness which has greatly shortened the time thus lost. In addition, it has made systematic provision in every borough for the care of infectious disease. The means by which these results were attained have cost something. In 1903 the expenses of the sanitary administration of New York were about $1,226,391. Taking the Mayor's statement as true that the work of the Health Department in 1903 effected a saving of 7,000 lives, how does this appear when considered as an offset to the cost of the work? Statisticians who have endeavored to establish the average value of a life to a community are agreed that $5,000 is a very conservative estimate. On this basis, the saving on 7,000 lives in one year gives us a credit entry of $35,000,000 and a net gain on the public health account of $33,773,609. There is an average of at least five serious cases of illness to each death. Each sick person must be taken care of by one or more well persons. If, therefore, we assume that sickness was reduced in proportion to the deaths, it is within the truth to say that at least 70,000 weeks of useful life were gained. Really the gain was much more than this. If the average money value of time is $10 per week, this adds $700,000 to the credit side of the account."

We can only add that the above bespeaks the appreciation and esteem of the public for what is constantly being done in its behalf.

PHILADELPHIA.

Reception to Dr. Trudeau.—Following the lecture of Dr. E. L. Trudeau, on Saturday evening, October 24, the first in a series of lectures to be given under the auspices of the Henry Phipps Institute for the Treatment of Tuberculosis, the distinguished speaker was given a reception at the Hotel Bellevue. The profession of Philadelphia feel that a distinct impulse to the already extensive movement against tuberculosis in this city was given by Dr. Trudeau's graphic account of his work at Saranac Lake.

Damages for Broken Jaw.—The jury in the case of Margaret H. Mandeville against G. C. Courtright and others, trading as the Alba Dentist Company, returned a verdict of $4,000 damages in favor of the plaintiff, who sued to recover for having her jaw broken by the negligence of an untrained dental student. The suit grew out of the conviction of the defendants during the past summer of practising dentistry illegally.

Dr. Tabor Loses Suit.—In the United States Circuit Court recently the trial of a suit brought by Dr. Susan J. Tabor against the Norristown Insane Asylum to recover $2,072.50 for professional services, resulted in a verdict for the defendant. For

a number of years Dr. Tabor had been employed at a salary of $2,500, but at the election in January, 1901, she failed to get the appointment for the ensuing year. As she had already begun the year before being notified of the decision of the board, Dr. Tabor demanded remuneration for the entire year.

Smallpox Treated by Faith Curist.—There was recently discovered at 1436 Bainbridge street a case of smallpox of over two weeks' duration that had been treated only by a female faith curist. The man was hurried to the Municipal Hospital, where he died soon after admission. When vaccine physicians were sent to vaccinate the people in the neighborhood they were mobbed by the sect living there, the members being opposed to vaccination. The quarantine officers were obliged to aid the physicians and some of the quarantined parties escaped. The sect living in that locality numbers about 800 people.

Horticulture for the Insane.—It is stated that Director Martin has sent several thousand plants from his farm to the Philadelphia Hospital, where they will be given over to the care of the mildly insane of the Almshouse. An appeal has been made for flowers and plants to help further the plan. The plants are to be set out in the hospital grounds where they will furnish recreation and employment for a considerable number of the inmates. Hothouse flowers will also be furnished.

Annex for Rush Hospital.—The Board of Trustees of the Rush Hospital for the Treatment of Consumptives has approved plans for a new hospital building at Lancaster avenue and Thirty-third street. The annex will have rooms for 40 patients, the present capacity of the institution. The State has appropriated $20,000, one-fourth the amount needed, and the balance must be raised by subscription. Of the 40 patients treated in the country branch of the hospital at Malvern, since last April, 10 have returned to their former occupations, apparently cured.

For Shorter Study Hours.—The subcommittee of the Parents' Association of the School of Observation and Practice, which is endeavoring to have the number of hours of home study for public school children decreased, decided at a recent meeting to make a systematic investigation in order to obtain definite information on which to base the movement. A man will be employed for one week to visit parents, especially those of pupils in the high schools. The committee passed resolutions declaring that their investigations convinced them that the evils of excessive home study in the public schools are not due to the teachers but to the overcrowded curriculum they are required to teach. The school hours of the second grade have been reduced from four hours daily to that of three.

To Check School Infection.—The Committee on Hygiene of the Board of Education has accepted the offer of the Health Department to determine, in an experimental way, what can be done to check the spread of infectious diseases among school children. An inspector will be appointed for one of the schools, if the board approve the plan, and the question given a practical test. Director Martin would have the school department subjected to no expense in the matter, as the physicians and nurses would be furnished by the Department of Health.

Allegheny Faces Quarantine.—The City of Allegheny is in danger of being subjected to quarantine on account of the alarming condition as regards smallpox. The situation is such that the State Board of Health has notified the authorities that if immediate steps to control smallpox are not put in force the entire 150,000 population will be put in strict quarantine. About six weeks ago smallpox conditions in the city reached such a point, through alleged inefficiency of the health officials, that it was necessary for the State Board to call a meeting of the business men of the city and notify them of the conditions and of what they might expect. The Superintendent of the Bureau of Health said that he lacked funds to carry out effective work and that $15,000 were needed. The State appropriated $25,000 but the proper control of smallpox has not yet been reached.

Municipal Hospital.—Director Martin has announced his intention to investigate the charges made by 25 employes, who recently quit the institution, regarding the food served them at the hospital and also the question of carelessness in the management. It is claimed that ambulances and drivers are not properly disinfected before going through the streets and that the food is not fit to eat. Assistant Director Sunderland states that there will be no investigation as the matter is settled. Regarding this apparent difference between the two authorities, the *Ledger* says editorially: "When Dr. Martin was appointed Director of the Department of Health, he was thoughtfully provided with an assistant familiar with the methods of the machine, to protect him from inconvenient mistakes. The usefulness of this arrangement is now apparent. Statements have been made regarding the conduct of the Municipal Hospital, which Dr. Martin proposes to investigate, declaring that if these statements are true the condition which they indicate is criminal. The Assistant Director, on the other hand, announces that "there will be no investigation," and that "the matter is closed." It is evident that both cannot be right. The question is, whether the Director or the Assisant Director represents the superior authority. Unless everybody has been much mistaken in Dr. Martin, the investigation will go on, irrespective of Mr. Sunderland, and the abuses that have come down from the old Administration will be corrected."

Dr. Wiley on Food Preservatives.—Dr. H. W. Wiley, Chief of the Bureau of Chemistry of the Department of Agriculture, who has been conducting experiments for the Government as to the effect of adulterated foods upon volunteer subjects, lectured before the Franklin Institute, Friday evening, October 23, on "Methods of Ascertaining the Effect of Preservatives Upon Digestion and Health." After giving a résumé of the methods used in the experiments, Dr. Wiley said among other things in closing: "Foods can be preserved for a reasonable length of time in most circumstances without resorting to any chemical preservative or added preservative of any kind. Simple sterilization, which can be applied to most foods, is the most effective and the least objectionable of all forms of food preservation, with the possible exception of cold storage. There may be occasions of emergency or exigency in which the use of a chemical preservative is rendered imperative. The short period over which such an emergency would extend would not seriously endanger the health of the consumer were he to eat food for a brief period containing any one of the principal preservatives in common use.

"It may be, further, a wise policy not to inaugurate prohibition against all preservatives, but it certainly is true that wherever for any reason a preservative must be used the package of food containing it should be clearly marked, so that the pur-

chaser and the consumer may be fully informed regarding the matter."

Methods of Cleaning That Scatter Disease.—In an open letter to the *Public Ledger* under date of October 17, Dr. Howard A. Kelly, of Baltimore, calls attention to the common practice of dust-raising during efforts at cleaning streets, street-cars, waiting-rooms, railway cars, etc. The text for the letter was a personal experience in Harrisburg recently, where he was awakened from a doze in the waiting-room of the station by a cloud of dust raised by an employe who was sweeping the floor. As a result of the inhaled dust there developed a cold which incapacitated him from work for several days. From Dr. Kelly's admirable and timely letter the following extracts are taken: "My object in writing this letter is to enlist the entire medical profession as a committee on the whole to expostulate in strong terms, to insist, to write vigorous letters to the daily papers if need be, or even perchance to be almost ready to resort to personal violence to put a stop to such atrocious practices. Let me ask this pertinent question: What right have you or I, my medical brother, to be longing for the dawn of a new era in medicine when we shall be in possession of a toxin for every disease, for tuberculosis and for kindred ailments, so long as we fail to utilize the far better and simpler efficient methods of preventing disease which we already have at hand; when, for example, such a city as Philadelphia, once noted for its cleanliness, becomes conspicuous for its filthy streets; when in our homes, in our streets, in our public places, that most modest of all virtues, cleanliness, holding in her beneficent hands a reduction of the morbidity and of the mortality of so many of the scourges of our modern 'civilization,' to a point far below 50 per cent. of its ratio, when cleanliness, I say, is unknown? Must we have magic to please our people? Must the remedy be a poison manufactured in a dramatic way and injected into the veins of the disease-stricken patient, in order to arouse our languid interest? We put the whole noble army of bacteriologists to utter blushing shame when, as a result of all their arduous labors, they give us such a preciously simple remedy, when, after having explained the causes of many of our most frightful diseases in a manner so simple that a child in a kindergarten can both understand the method of invasion and apply the remedy; we shame them, I say, when, after having thus done all the most sanguine imagination could have proposed, we dumbly plod along the same old dusty, dirty road, waiting to crown the discoverer of an anti-toxin. A distinguished President of one of our great universities told me some ten years ago that he had joined an association known as 'the kicking society,' the members of which were obliged to object every time they saw gross violations of the law and injustice done. Let us constitute then a kicking society from Maine to California, and insist on clean streets, clean houses, clean public buildings, and clean cars. Let it be recognized as a grave offense and an insult to force a neighbor to inhale myriads of pathogenic germs. The primary inviolable right of every man is to pure air and pure water and sunlight when the sun is shining. See, my brethren, that he is not robbed of his rights."

The National Association for the Study of Epilepsy and the Care and Treatment of Epileptics.—This association will hold its third annual meeting in the College of Physicians, corner Thirteenth and Locust streets, Philadelphia, on November 5, 1903. The first session will begin promptly at half-past two in the afternoon, the second at eight o'clock the same evening. The association has no membership dues. Any one interested in charitable work may become a member on application to the President, the Chairman of the Executive Committee, or to the Secretary. The following program has been arranged: Presidential Address, Wharton Sinkler, M.D.; The Early Diagnosis of Epilepsy from Diseases Causing Epileptiform Convulsions, Charles K. Mills, M.D.; Some Considerations Regarding the Surgical Treatment of Epilepsy, J. Chalmers DaCosta, M.D.; The Treatment of Epileptics in Private Practice, Wm. N. Bullard, M.D.; A Treatment Room for Epilepsy and Some of its Results, Everett Flood, M.D.; Report of a Case of Removal of the Ovaries and Tubes for Epilepsy, A. H. Halberstadt, M.D.; Report of Cases of Trephining for Epilepsy, John C. Munro, M.D.; Some Remarks on Animal Epilepsy, L. Pierce Clark, M.D.; The Case of Millard Lee, E. J. Spratling, M.D.; Progress of the New Jersey Village for Epileptics at Skillman, N. J., H. M. Weeks, M.D.; The Psychological Aspects of Epilepsy, Wm. P. Spratling, M.D.; The Consideration of the Epileptic State by the Courts, John B. Chapin, M.D.

Alvarenga Prize of the College of Physicians of Philadelphia.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $180, will be made on July 14, 1904, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published, and must be received by the Secretary of the College on or before May 1, 1904. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award. The Alvarenga prize for 1903 has been awarded to Dr. William S. Carter, of Galveston, Texas, for his essay entitled: "The Relation of the Parathyroids to the Thyroid Glands."

CHICAGO.

Public Health Matters.—A wellnigh incredible decrease in the deaths and the death rates of the two most dreaded diseases of childhood was demonstrated during the week. Briefly stated, the records for sixteen years show that there were 2,152 deaths reported from scarlet fever during the eight years, 1887 to 1894 inclusive, while there were but 1,648 such deaths reported during the last eight years, 1895 to 1902 inclusive. In the first period there were 11,251 deaths from diphtheria and croup; in the second period only 7,093. The average yearly population of the first period was 1,050,000; of the second period it was 1,610,000, or 53.3 per cent. greater. In proportion to the increased population, the scarlet fever deaths decreased exactly 50 per cent., and the diphtheria and croup deaths decreased 59 per cent. Had the same mortality rate per 10,000 of population obtained from scarlet fever during the last eight years that did during the first eight years there would have been 4,121 deaths from this disease, instead of the 1,648 actually reported, a reduction of 2,473 in the number of scarlet fever deaths. Had

the same diphtheria mortality rate obtained during the second period that did during the first there would have been 21,461 diphtheria deaths, instead of the 7,093 actually reported during the last eight years, a reduction of 17,368 in the number of deaths from diphtheria and a total constructive saving of nearly 20,000 lives from these two diseases alone. The greater decrease of diphtheria mortality is due, of course, to the antitoxin treatment of the disease.

Twenty-fifth Anniversary of Chicago Gynecological Society.—This Society held a banquet, October 16, in commemoration of the twenty-fifth anniversary of its foundation. Dr. J. Henry Carstens, of Detroit, delivered an address, and reminiscent remarks were made by several members. Election of officers for the ensuing year resulted as follows: President, Dr. Emil Ries; Vice-Presidents, Drs. Joseph B. DeLee and Frank T. Andrews; Secretary, Dr. Palmer Findley, and Treasurer, Dr. Chas. B. Reed; Pathologist, Dr. Gustav Kolischer, and Editor, Dr. Rudolph W. Holmes.

Xeroderma Pigmentosum.—At a meeting of the Chicago Medical Society, held October 14, 1903, Dr. James Nevins Hyde showed three cases of this disease. The three children are a brother and two sisters of one family. Three boys, born first, are perfectly well, then these three children, and two others who are perfectly well. The infant, about one year old, was stripped and examined by him two days ago, without exhibiting the slightest evidence of the disease. The disease is uniform in its appearance, and the three cases illustrated perfect types of the affection. There is not a single symptom of the disease which is not seen in other cases. A peculiarity of these cases is the complexus of symptoms at an early age, and these can be readily grouped into four tolerably distinct categories, although there are authors who add several others. These others he believes to be sequences of the original primary lesions. (1) Pigmentation or freckling is very distinctly marked, mostly on the exposed surfaces of the body, face, hands, forearms, upper chest, and in some cases in the lower extremities and dorsum of the feet, varying from a light fawn to a deep chocolate color, deepening with years. Sometimes there are indistinct isolated freckles or pigmentations; in other cases confluent, forming spaces without very distinct circumscription. (2) Whitish spots, maculæ, which are atrophic in character. These symptoms precede the freckling, and sometimes follow. The white spots are most conspicuous usually upon the exposed surfaces of the body, usually about the orbits and other portions of the face, but they are also visible in other regions. The maculations are smooth, whitish, slightly wrinkled, atrophic, and in some cases contract so as to produce a cicatricial contracture. (3) Telangiectases, minute blood-vessels developing in the skin. (4) The formation in different parts of the body, on the hands, face, and elsewhere, of nodes, nodules, warts, as they are sometimes called, practically epithelioma, so much so that the disease has been described as distinctly from the beginning precocious epitheliomatosus of the skin. All the other symptoms of the disease described by authors, in his judgment, are secondary to those he had outlined under the four heads given. They are ulceration, breaking down of the warty growths, crusting, cicatrization following the ulceration, and in some cases the formation of a distinct epithelioma from the cicatrix. Sometimes there is a verrucous desquamation of the scalp. The etiology is obscure. The prognosis in all of these cases is grave. A few cases have been seen where the disease seemed to have been arrested for six, eight or more years. Most of these cases develop at the close of the first year of life. These cases developed at about that time. The earliest period on record at which the disease has developed is between the third and fifth months. A few cases have occurred in people of seventy and ninety years of age, but one must accept such statements with reserve. Light-colored hair is a conspicuous feature. These patients have no lighter hair than those who are affected with the disease.

Syphilis of the Heart and Aorta.—Dr. Robert H. Babcock read a paper on this subject before the Chicago Medical Society, October 14. He said our knowledge of the pathological changes which take place in the heart as a result of syphilis is of comparatively recent date. The first authentic case of the kind was one of gumma and endocardial thickening, published by Ricord in 1845. This was followed by a similar one by Lebert four years later, after which a gap of eight years ensued, and then, in 1858, a case was recorded by Virchow. This famous pathologist then pointed out for the first time that sclerotic changes might be produced by luetic infection. It was about this time or a little later that Fournier began to direct attention to syphilitic manifestations as seen in the central nervous system, and their great clinical importance. The following ten or fifteen years witnessed a great awakening to the fact that this disease does not spare the nervous and circulatory apparatus, as had previously been supposed. Numerous examples of cardiac syphilis were reported by observers on the Continent and in England. These cases were the accidental discovery at the deadhouse, and it was not until late in the seventies that the clinical manifestations of cardiac syphilis began to be recognized and published. The first elaborate monograph on syphilis of the cardiac structures was from the pen of Lang, in 1889, and in 1893 Mracek published another exhaustive paper in which were collected a hundred cases out of the literature, so that, as remarked by Runeberg in his recent excellent contribution to this subject, it appears that the actual number of recorded cases had not been so few as was supposed. Since the appearance of these papers, clinicians have not left the observation of cases to the pathologists, but have been reporting a steadily increasing number of observations, until now cardiac syphilis can no longer be said to belong to the great rarities of medicine. Dr. Babcock then discussed the morbid anatomy, symptoms, diagnosis, prognosis, and therapy of cardiac syphilis. Therapeutics should not be omitted, but when cardiac incompetence is present, such medication should also be combined with other measures generally recognized as appropriate to such symptoms, namely, rest, digitalis, strychnine, nitroglycerin, cathartics, etc., as indicated. Experience teaches that without mercury and iodides such tonic and depleting measures are of doubtful value, and in no wise curative, but if no improvement follows the prolonged and energetic use of specific remedies, then reliance must be placed on the so-called heart tonics alone, and particularly on such rules for conduct as will conserve cardiac power and protect the organ from injurious strain.

The Early Diagnosis of Typhoid Fever.—At a meeting of the Chicago Medical Society, held October 21, 1903, Dr. Edward F. Wells read a paper on this subject, in which he said that the early diagnosis of typhoid fever was of prime importance to the patient, the community and the physician, for various and obvious reasons. The patient's con-

venience, comfort and safety were notably increased. His business and social engagements, as well as those of his dependents, superiors or associates, might require more or less radical modification. The community was deeply concerned because the typhoid patient was a source of danger to others, near and distant, and proper communal prophylactic measures should be instituted at the earliest possible moment. The physician's usefulness was enhanced by early diagnosis, because thereupon must be based an enlightened therapeusis. These facts appertained, generally, to military, naval and institutional, and especially to private practice. The present status of this problem was markedly different from that which was presented a generation ago, and he was not sure that it had been simplified, or its solution made easier. For example: It would not be gainsaid by any practitioner of medicine whose experience had compassed or exceeded the past quarter of a century that a marked change had come over the clinical picture of typhoid fever. Twenty-five or thirty years ago, it was, as a rule, a severe, prostrating disease, with delirium, coma vigil, paresis of many of the reflexes, a duration of about four weeks, and a prolonged convalescence. Now all these features are, in the average case, moderated. The malady was less severe, less prostrating and less dangerous than before, but it must be said, however, that in these particulars the malady varied from year to year. It was apparent that diagnosis was assisted by a clear-cut and accentuated symptomatology, whereas it hesitated in the presence of indefinite symptoms. Several comparatively recently established diagnostic aids which rendered such assistance that we probably now obtained, with increased labor and difficulty as early and reliable results as were formerly obtained by less laborious methods. In the early diagnosis of typhoid fever primary place should be accorded a consideration of those clinical features which have the greatest diagnostic significance. Due weight should be given to the previous environment of the patient; his medical history; prodromata; the mode of onset of the attack; the symptoms presented. The onset of the disease was usually so insidious that the patient could only indefinitely date the beginning of his illness, and when he once took cognizance of his condition, a number of symptoms were already markedly present. Although such an advent was the rule, yet a sudden onset was not rare. In attempting the early diagnosis of typhoid fever we should bring to our assistance every diagnostic device at our command; especially should we practice blood and urinary examinations. The urine should be examined daily, and this examination should include particularly the absolute and differential leucocyte counts. In uncomplicated typhoid fever, the leucocytes were normal, more or less markedly decreased or, rarely, very slightly increased in number. In regard to the Widal reaction, in it we have one of the most valuable as well as most spectacular of the advances of modern medicine. It usually appeared during the second week, rarely at the end of the first week, and when found it pointed strongly, if not directly, to either a present or past typhoid fever. It should be remembered that the agglutinating properties in the serum remained for many years, or permanently, after an attack of typhoid fever, so that in the absence of an authentic medical history, it might be actually misleading in the doubtful cases. However, with supplemental cultural observations, this fallacy might be guarded against. Typhoid fever must most frequently be differentiated from influenza, malaria, cerebrospinal meningitis, acute tuberculosis, subacute appendicitis, paratyphoid fevers, and indefinite intestinal infections. Typhoid fever, like cases of influenza, might be recognized by the presence of the influenza bacillus in the nasal and other respiratory secretions; the rapidity of the pulse; the absence of typhoid bacilli, indican, and the diazo-reaction in the urine; the absence of splenic tumor; the absence of a gradual diminution of polynuclear, with a corresponding increase of the mononuclear, leucocytes; the absence of typhoid bacilli in the blood, and absence of the Widal reaction. In like manner, by applying to the case the specific diagnostic features which apply to malaria, cerebrospinal meningitis, acute tuberculosis, subacute appendicitis, and denoting the absence of those which belong to typhoid fever cases, these maladies might be placed in their proper nosological place.

GENERAL.

Proposed Pure Food Law.—The Association of Manufacturers and Distributors of Food Products of the United States held its quarterly meeting recently in the Manhattan Hotel. The association, which is composed of 36 of the largest manufacturers of jams, preserves, and table condiments in the country, is interested chiefly at present in securing the passage of a National pure-food law at the coming session of Congress, and the meeting was devoted to outlining plans for the work before Congress this fall. The bill which will be urged will provide for free inter-State commerce in food products which conform to a certain standard of purity.

The Journal of Infectious Diseases.—This is a new journal to be devoted to the publication of original investigations dealing with the general phenomena, causation, and prevention of infectious diseases both of known and of unknown origin. It is the aim of the journal to occupy a special field and to include only such contributions as bear with reasonable directness upon the topics indicated in the title. The biology and chemistry of the various pathogenic micro-organisms, the physiology and anatomy of the morbid processes that they initiate, and the hygienic and sanitary problems to which they give rise are considered to be especially within the scope of the undertaking. Particular attention will be given to prompt publication, and to facilitate this object numbers will be issued at irregular intervals as rapidly as the amount and nature of the available material permit. Each volume will contain a minimum of 500 pages, and it is expected that at least one volume will be issued annually. One hundred reprints will be furnished free of cost to contributors. The *Journal of Infectious Diseases* has been established in connection with the Memorial Institute for Infectious Diseases, by the munificence of Mr. and Mrs. Harold F. McCormick, and will be conducted under conditions that insure its permanence as well as the adequate presentation of the material submitted for publication.

The first number of the journal will appear January 1, 1904. All communications should be sent to the *Journal of Infectious Diseases*, Chicago, Illinois. Subscription price, $5.00 per volume.

Women at Tufts Medical School.—According to the statistics of the professional schools, at Tufts College there is a steady increase in the number of women taking up medicine. The entering class numbers 150, of whom about 20 are women. The school now has 465 students on register, and is the largest of its kind in New England. The dental school has an entering class of 56. By the recent acquisition

of the Stearns estate Tufts becomes the sixteenth largest endowed college or university in the country, having funds in its possssion for over $2,225,000.

Louisiana Quarantines Against Texas Towns.—A proclamation of quarantine has been issued by the Louisiana State Board of Health against Laredo and San Antonio, Texas, and all railroads and other common carriers were prohibited under penalty from bringing into Louisiana passengers, household goods, and cars from those places unless they are first fumigated with sulphur by authorized health authorities.

The board also approved the action of the President, who, on Thursday forbade the sale of tickets from San Antonio to Louisiana points.

In order to guard against any danger, Dr. Souchon called representatives of the Texas railroads into conference and told them of the order. He sent for the Health Officer of Houston, and told him Louisiana would not quarantine against Houston provided Houston would institute a quarantine of its own against infected points which would be thoroughly satisfactory to the board.

This the Houston health officer promised. To make assurance doubly sure, Dr. Souchon has sent inspectors to Houston to watch developments. Another will be placed at Beaumont, and three are near Shreveport.

Hematological Notes.—Writers on hematological topics are requested to send two reprints of their papers or two numbers of the respective journals to the undersigned for purposes of review in the *Folia Hæmatologica*. In the place of reprints, authors' abstracts will also be received. These can be published immediately after or coincidently with the appearance of the original.—Charles E. Simon, M.D., American editor of the *Folia Hæmatologica*, Baltimore, Md.

Titles for Navy Doctors.—If the recommendations of Surgeon General Rixey of the Navy are carried out there will be a new set of titles to be memorized by the American who keeps in touch with the United Service. The medical arm of the navy has become dissatisfied with the mere professional titles by which various officers are designated, and has brought pressure to bear to have dignity added to its members. Surgeon General Rixey in his annual report therefore recommends: "That Congressional action be asked for authority to rename the different grades of the medical corps now existing as follows: In place of Surgeon General, Surgeon Admiral; and in the other grades, Medical Director to become Surgeon Captain; Medical Inspector, Surgeon Commander; Surgeon, Surgeon Lieutenant Commander; Passed Assistant Surgeon, Surgeon Lieutenant, and Assistant Surgeon, Surgeon Lieutenant (junior grade)." Attention is also drawn to the need of better hospital and receiving ship accommodations for the navy, of a dental corps and two additional hospital ships. Surgeon General Rixey also deems it important that the medical corps should be represented on the General Board of the navy.

New York Orthopedic Dispensary and Hospital.—The trustees of the New York Orthopedic Dispensary and Hospital Announce that the Surgeon-in-Chief, Dr. Russell A. Hibbs, will give a course of clinical lectures on orthopedic surgery at the institution, on Tuesday and Thursday afternoons, at 4 o'clock, from November 10 to December 15 (both inclusive). The course will be free to the medical profession and students. No lecture will be given Thursday, November 26.

French Hospitals for Consumptives.—The investigations of the hospitals for the treatment of tuberculous diseases were made in France, which, Mr. J. S. Ward, Jr., writes, are in advance of all other countries in that respect. "Altogether in France," he says, "there are 4,443 beds for tuberculous children. In Paris every year there are about 12,000 deaths from tuberculosis, of which 2,000 are children. In New York, while the total number of deaths is smaller, the proportion is about the same. Last year there were 9,389 deaths, of which 1,184 were children. There are now approximately 4,000 children in this city suffering from some form of the disease, and of this number 3,000 live in tenements. Paris supports two hospitals for the care of tuberculous children. One is at Berck-sur-Mer, not far from the city, and the other at Hendaye, on the Bay of Biscay, near the Spanish border. Both of these are primarily for the treatment of tuberculosis of the bones, as in France physicians now generally believe that the sea air is not beneficial to those suffering from lung diseases. No pulmonary cases are being treated at Berck, but at Hendaye, on account of its warm climate, there are a few pulmonary patients. Berck is one of the best known of French hospitals. It was founded in 1861, has grown up to cover a large amount of land, and contains 750 beds, all of which are now occupied. A nominal charge is made, and it costs for the support of each patient 2f. 25c., or about 45 cents a day. That includes light, heat, medicines, food, wages, all incidentals, and the cost of transportating the children to and from Paris. The patients vary in age from three to fifteen years, and the average period of their stay is one year, although some are there for only three months and others as long as three years. An average of about 29 per cent. are discharged as cured. The most instructive hospital which Mr. Ward visited, from the point of view that it could best serve as a model for a similar institution here, was that at Ormeson, near Paris, a hospital for the treatment of children afflicted with pulmonary tuberculosis. Connected with Ormeson, which is solely for boys from three to ten years of age, is a larger institution at Villier-sur-Marne for the cure of boys from ten to sixteen years of age, and the hospital at Noisy for girls. These three hospitals, which are situated within a short distance of one another, are all for pulmonary tuberculosis, and are supported by the French charitable organization known as L'Oeuvre des enfants tuberculeux. Mr. Ward is of the opinion that the most desirable site for the proposed hospital would be at Coney Island, where the association now supports a seaside home for children. A hospital modeled somewhat on the lines of Ormeson and containing 100 beds, Mr. Ward thinks, could be built for $100,000, that amount to include also the cost of the land.

Another Croaker.—Prof. Karl Pearson of the Anthropological Institute took as the subject for his Huxley memorial lecture the inheritance in man of the mental and moral characters and its comparison with the inheritance of physical characters. The professor, looking dispassionately from the calm atmosphere of anthropology, said he feared there was really a lack of leaders of the highest intelligence in science, the arts, trade and even politics. In Great Britain he saw a want of intelligence in the British merchant, professional man and workman. There was a paucity of more intelligent men to guide those of moderate intelligence. The mentally better stock, he said, was not reproducing itself at the same rate as formerly. He continued: "We are standing at the commencement of an epoch which is marked by a great dearth of ability. The remedy lies beyond the reach of revised education systems. It is necessary that psychical characters should not be manufactured by the home, the school or the college, but

should be bred in the bone. For the last forty years the intellectual classes have ceased to give the nation a due proportion of good men."

Obituary.—Maurice Fieschor Pilgrim, A.B., M.D., was born on October 26, 1857, and died Sunday, October 18, 1903, at his home, 407 West Fifty-seventh street, New York City, after a brief illness of pneumonia. Dr. Pilgrim was a native of New Jersey. He received his degree of M.D. in 1884 and at once entered general practice, deciding at the end of his second year's work to discontinue his general practice, and devote his energies to the treatment of the eye, ear, nose and throat. He spent the following year abroad, entering one of the large hospitals in London in order to more fully equip himself for this line of work. Returning to this country he began the practice of his specialty in Boston, Mass. Being a man of advanced ideas, and realizing early in his career, the value of physical measures in the treatment of disease, he became a warm advocate of electricity. He discovered and exploited the beneficial effects of galvanism in the treatment of glaucoma and wrote quite extensively on this subject. He was among the first in the profession to call attention to the dangers of the X-ray in the treatment of cancer. Dr. Pilgrim was a prominent member of the American Electro-Therapeutic Association, having held the high office of first Vice President, and was, at the time of his death, chairman of the Executive Council of that Association, a position previously eligible only to ex-Presidents of the Association. In the latter part of September, 1902, his attention was drawn to the new therapy, Mechanical Vibratory Stimulation, which was just beginning to attract the attention of the profession. Realizing the remarkable possibility of this new line of work and the prompt results which usually followed its proper application, he at once began investigation and the last year of his life was devoted exclusively to placing this science before the profession, having written quite extensively for the medical press, and his book on Vibratory Stimulation is to-day the only authority extant on this subject. Dr. Pilgrim was held in high esteem as a writer and advanced thinker, and was quite prominent as a writer on Psychological subjects, having held the Chair of Psychiatry in the New York School of Physical Therapeutics, and was editor of the Department of Psychiatry in the *Journal of Advanced Therapeutics* at the time of his death.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, October 17, 1903.

THE KING AND SIR FREDERICK TREVES—OPENING OF THE MEDICAL SCHOOLS.

The King's health has again been the subject of disquieting reports. It was said that symptoms of fresh abdominal trouble had manifested themselves, that the surgeons were holding themselves in readiness, and that another operation was imminent. The reports, as it turned out, had no more solid foundation than the fact that the *Court Circular*, an organ which chronicles the doings of the royal family down to the "small beer" of their exalted lives, announced that Sir Frederick Treves was on a visit to the King at Balmoral. The fact that this circumstance should have been taken to mean that there was some ground for fear about His Majesty's health throws an instructive light on the social position which the medical profession holds in the eyes of the people of this country. It is evidently assumed that the King would not ask even the most distinguished surgeon of his realm to be his guest unless he had occasion for his professional services. To do the King justice, there is no room for the shadow of a suspicion that any motive of the kind underlay the courtesy which he extended to Sir Frederick Treves. He is naturally grateful to the man to whom he owes his life, and he treats him as a friend for whom he has a special regard, and on whose judgment he relies in matters altogether outside the province of the healing art. That no surgical emergency is considered likely to arise is shown by the fact that Treves is making use of his new found liberty from the toils of professional life in a voyage round the world, on which he has just started. It is still, notwithstanding his emphatic denials, persistently stated that he will enter on a political career on his return. I do not look upon this as probable, because it would involve his giving up his work as a member of the Advisory Board of the Army Medical Service, in which he takes the keenest interest. In any case it seems certain that he is lost to surgery.

The twelve medical schools in the possession of which this privileged metropolis rejoices opened their gates again after the summer recess at the beginning of the present month. I have not yet seen the statistics of the entries at each school, but it is becoming manifest that the importance of London as a teaching center in the world of medicine is gradually decreasing. This is due to the multiplication of Universities in the provinces and to the continued failure of the University of London to adapt itself to the needs of ordinary students of medicine. The standard of its examinations places its degrees beyond the reach of any but persons of exceptional ability who can afford a longer and more costly curriculum of study than the average parent or guardian is prepared to sanction. As a teaching body the university is still in an early stage of embryonic life. A few courses on the more abstruse parts of physiology and other ancillary subjects are given to advanced students. Apart from these, however, the whole work of teaching is done in the schools attached to the various hospitals, which are now, though severally autonomous, organic parts of the university. The waste of power caused by the distribution of the teaching of the sciences which form the basis of medicine among so many rival bodies is incalculable. This was pointed out more than thirty years ago by Huxley, but "vested interests" and jealousies of one kind or another have hitherto prevented the fusion of the hospital schools into one or perhaps two great university institutes in which anatomy, physiology, chemistry and so forth should be taught by first-rate men paid on a scale sufficiently liberal to induce them to give their life to the work of their chairs. That this consummation will be arrived at some time may be looked upon as certain. At present several of the hospital schools are tottering on the verge of bankruptcy. So dire are the financial straits to which three or four are reduced that they cannot pay their teaching staff more than the merest pittance. One or two of them have to be subvented from the funds of the hospital proper, a state of things which gives occasion to the heathen to blaspheme by saying that the money subscribed by the public for the relief of the sick poor is diverted to the furtherance of vivisection. The staff of at least one hospital, besides forfeiting their fees, have actually to put their hands in their pockets to keep the school going. At one or two hospitals which only a few years ago used to attract a considerable number of students, it is now found difficult to get enough men to hold the minor appointments. Having regard only

to the higher interests of medical education, the sooner the hospital schools are absorbed into the infinite the better. London can never become the great medical center which it ought to be until it has a real living teaching university that will provide scientific training for students, leaving them to find their clinical teaching at one or other of the hospitals.

SOCIETY PROCEEDINGS.

NEW YORK STATE MEDICAL ASSOCIATION.

Twentieth Annual Meeting, held at the Academy of Medicine, New York City, October 19, 20, 21, and 22, 1903.

(Continued from Page 816.)

Serum Treatment.—Horses can be inoculated with Shiga's bacillus and with several types of these acid-fermenting bacilli and thus be made to produce a serum which is curative for the pathological conditions produced by these various micro-organisms. During last summer some experience in these cases and their treatment by serum was secured by the New York Board of Health. About 50 cases were under observation. About one-half of these were treated by serum. Some of the mild cases did not seem to be much improved by this method of treatment, though none of them became worse. Bad cases treated with serum apparently did better than corresponding cases treated without serum.

Laboratory and Clinic.—Dr. William P. Northrup said that it is extremely encouraging for the clinician to find that the laboratory workers are approaching a definite conclusion on this important subject of dysentery. To him it seems impossible at the present time to account for all the differences which occur in the pathological conditions found in the intestines of children who have died from dysentery on any common ground. It is possible, however, that as in the case of diphtheria the resistive vitality and the special virulence of the micro-organism, may account for all the clinical differences. It is to be hoped that the serum treatment will prove as effective in this as in diphtheria. Dr. Northrup thought it impossible ever to be enthusiastic about diphtheria serum and hopes against hope to be enthusiastic before long about dysentery serum.

Order out of Chaos.—Dr. Charles G. Kerley said that the bacteriologists have at last got order out of the chaos of the bacteriology of the intestinal tract. The important feature of modern progress for the physician is that the contents of the intestine are primarily infected and not the mucous membrane. The principle of treatment remains the same, to clear out the intestines and make the infantile digestive tract an unfavorable nidus for bacterial growth. Dysentery has not as yet proved its value, but there is apparently a future for it.

Radium and Medicine.—Dr. Samuel G. Tracy, of New York, exhibited specimens of radium of various strengths and discussed the possibilities of its application to medicine. It has already been used with apparently good success for the treatment of lupus and superficial epitheliomata. It has also been used with some success for the treatment of certain eye conditions and there is some hope that it may revolutionize ocular therapeutics for deep-seated conditions. The inhalation of gas, which has been allowed to pass through the water of a wash bottle in which radium is contained, carries into the lungs particles which have for the moment acquired radiant power and that may act upon the pulmonary tissues. This treatment for tuberculosis is now under discussion.

Postoperative Elevations of Temperature.—Dr. Martin B. Tinker, of Clifton Springs, N. Y., said that when elevations of temperature occur after operation the surgeon's first thought must be as to the condition of the wound. If this is good, a careful physical examination of all the internal organs must be made, and for this consultation with a good internist, whose opinion can be depended upon, is a source of great satisfaction. The principal causes of rise of temperature are small pulmonary emboli, phlebitis and thrombosis of vessels, pneumonia, bronchitis and malaria. Some authorities say that most of the pneumonias which occur after operations are embolic in origin, rather than due to the aspiration of irritant material into the lungs. It is not improbable, however, that in many cases both causes are at work. In pulmonary emboli the fever is not very high, is not accompanied by rigors and is not sudden in its rise. It is usually remittent, though at times intermittent. It occurs more especially after abdominal operations and especially those done for the radical cure of hernia. Often in these cases the wound will be found healed per primam, showing that infection had nothing to do with the respiratory condition.

Thrombosis.—Rises of temperature from thrombosis, are not infrequent and represent some of the otherwise unexplainable rises of temperature after operation. Pericarditis occurs occasionally and has, in Dr. Tinker's experience, been seen after the operation for the radical cure of hernia. Malaria is frequently a cause of rise of temperature. If patients have malaria in their histories, the possibility of their having harbored the plasmodium in their spleen for several years, until the disturbance of the system incident to operation invites it to come out, must not be forgotten.

SECOND DAY—TUESDAY, OCTOBER 20, 1903.

Alcoholism and Morphinism.—Dr. Alfred T. Livingston, of Jamestown, N. Y., discussed the various methods for the treatment of these conditions. The application of cold to the head and of a cold spray to the spine with galvanism of the cervical sympathetic, and the use of static electricity along the spine of the current's strength with a spark gap five to eight inches in length, usually quiets patients and does away with the necessity for the use of narcotics or hypnotics. Dry cupping over the whole spine, not with the old alcohol cups, but with valve cups emptied by an air pump, is also of use, and may be supplemented by the employment of skilled massage. These physical therapeutic methods will lessen the necessity for drugs.

Drug Treatment.—Dr. Livingston considers that the bowels must be kept free from irritating material and for this a mercurial purge followed by salines is the best. Abundant fluid should be supplied and attention paid so that the patient takes it. Most of the food should be given in the form of fluid, easily digested material being particularly employed. During acute stages of the symptoms produced by alcoholism or morphinism, the hypodermic injection of ergot is the best remedy. About half a dram of ergot should be given two or three times a day in milder cases, or in severer cases every two hours, or even every hour, if necessary. The solution of ergot employed should be of 12½-per-cent. strength, or in the form of Squibbs' new extract of ergot. After the severer symptoms have passed off special attention must be paid to the diet and to the patient's bowels. As a regular laxative in Dr. Livingston's experience, the fluid extract of Rhamnus frangula should be employed in doses of one or two drams at bed time.

Effect of Ergot.—The ergot immediately produces restfulness, and does away with the craving for any toxic material that has been taken before. A doctor patient recently under treatment for alcoholism asked

what under the sun was being given to him that took away his craving. There is no need to employ narcotics or hypnotics in extreme cases of morphinism, when as much as ten grains of morphine a day have been taken. A slight amount of the drug may be employed for the first two days. One-tenth of the usual daily amount, halved each day, until none is required.

Ergot in Alcoholism.—Dr. Alexander Lambert, of New York City, said that he had found ergot extremely useful in the treatment of alcoholism. In his yearly service of six weeks in the alcoholic wards he formerly had 25 to 30 deaths. He has employed ergot for the last two years, and has had respectively six and seven deaths. This includes all the patients admitted, though among them were one or two with fractured skulls, several who came in on the third day of pneumonia after a month's spree, and other unfavorably conditioned patients. In a common class of alcoholics those who come in in intense depression, sleep occurs almost at once after the administration of ergot, and some hypnotics, and when they awake appetite has returned and the craving for alcohol is practically gone.

Acute Alcoholism.—When patients come in in the full vigor of alcoholic stimulation they are given two drams of paraldehyde in an ounce of whisky, the ergot being administered at the same time. If they are not resting at the end of an hour the treatment is repeated. The narcotics work very well, if only morphine is kept away from the patient. In splenic alcoholism patients who come in looking for trouble, powerful longshoremen, furiously maniacal, a hypodermic of apomorphine is employed, a tenth of a grain being administered. This converts a raving maniac into the limpest kind of a specimen of humanity. He does not vomit, but becomes calm; can be rolled up in a blanket, and after being given ergot sleeps for several hours and wakes up ready for food.

Dosage of Ergot.—Those who have reported failures with the ergot treatment have probably not used sufficient amounts of the drug. In severe cases thirty minims of a 12½-per-cent. solution, as suggested by Dr. Livingston, are given hypodermically and repeated in an hour, and after that every two hours if the patient seems to need it. In the shaking alcoholism where delirium tremens seems about to break out, patients become quiet in six hours and pass on to convalescence.

Wet Brain.—In alcoholic wet brain the effect of ergot is most marked. Anyone familiar with alcoholic patients knows the rapidly exhausting condition with serous exudation into the brain tissues, which occurs in old chronic alcoholics and has up to this time been practically always fatal. Dr. Lambert has tried hot salines, hot and cold packs and felt satisfied if he saved three out of one hundred of these patients. To his utter astonishment, since employing ergot he practically never loses any of these patients. Of the last 30 such cases under treatment only two have died. It is evident that the ergot tightens up the cerebral vessels and prevents the exudation of serum which formerly caused intense brain edema and death. Of course, in all these cases it is necessary to clear out the bowels thoroughly, keep them open during the course of the treatment and push the food.

Morphinism.—In morphine cases ergot has been quite effective. At Bellevue the morphine maniacs are especially unfavorable for treatment. Most of them do not want to give up the habit, but are sent in by friends. The rule is not to cut off the morphine at once, but this is only because of the row which patients make if entirely deprived of the drug. No matter how much the patient has been taking, however, forty-eight hours is considered sufficient for the tapering-off process. When ergot is administered it relieves the craving and the anguish that come over these patients quite as well as it does in alcoholism.

Dr. Wiggin said that in a limited way he has employed ergot for alcoholism in connection with his surgical work and has found it extremely useful. It especially relieves the insomnia of alcoholic patients who have been treated surgically. It must be given in good large doses, however. Dr. Wiggin employs a solution of one dram of the extract to an ounce of water, and gives one dram of the preparation thus made hypodermically.

Laboratory Aids to Diagnosis.—Dr. D. A. Robertson, of Brooklyn, N. Y., mentioned the various laboratory methods of diagnosis which of late years have come to the help of the clinician as auxiliaries in the differentiation of disease. The blood count, and in recent years particularly, the differential blood count, and the significance of leucocytosis as well as the recognition of degeneration of the red blood cells, as for example the basophylic granules in lead poisoning were discussed. The uses of the Widal reaction and of microscopic examinations for malaria were pointed out. In malaria the existence of the spasmodium absolutely decides the diagnostic question, but also is of great value as to the prognosis and is suggestive as to the method of treatment that should be employed. During the war with Spain the camp fevers would never have become so widely distributed as they did if the Widal reaction and microscopic examinations of the blood had been the rule. There would have been no confusion of typhoid and malaria, nor any question of the existence of a combination of the two. In diphtheria bacteriological diagnosis is of the greatest possible service.

Inconveniences of Laboratory Diagnosis.—In discussing Dr. Robertson's paper, Dr. E. V. Delphey, of New York City, said that laboratory diagnosis is not without its disadvantages unless constantly controlled by the clinical diagnosis. Not long since he had a case of diphtheria in which the clinical symptoms apparently were not those of true diphtheria. The Board of Health declared it to be diphtheria, however, but on protest after some time, acknowledged that there were no diphtheria bacilli then present in the mouth. A laboratory diagnosis made for intensity of virulence on a specimen taken almost at the same time, however, showed intensely virulent diphtheria bacilli present, and so announced from the official station. It is evident that there is more than one loophole through which laboratory diagnosis may fail.

Dr. Robertson, in closing the discussion, said that the laboratory diagnosis needs always to be controlled by the clinical symptoms.

Treatment of Puerperal Infection.—Dr. J. H. Burtenshaw, of New York, said that in no essential way does puerperal infection differ in its nature or onset from sepsis following a surgical operation. Reduced to few words, the treatment should aim (1) to remove the source of infection; (2) to neutralize the effects of the septic germs or of their toxins; (3) to support the patient's vitality. He believes curettage of the septic uterus with a sharp instrument to be unjustifiable, but recommends that retained secundines be removed by means of a finger or, under certain circumstances, with a dull wire curette. Every care should be taken not to wound the endometrium. Lacerations of the cervix and vagina should be cauterized. The cavity of the uterus should then be irrigated with two gallons or more of warm salt solution, or one-per-cent. lysol solution. Both cavities should then be packed with 10-per-cent. iodoform gauze. He has never obtained as satisfactory results from the use of vaginal or uterine tampons soaked in formalin or alcohol. He does not

favor continuous irrigation of the uterine cavity in cases of infection, as the pathogenic organisms are lodged beyond the granulation wall. In sapremia such irrigation may be of benefit. He does not approve of hysterectomy in these cases, as, if operation is performed sufficiently early to insure a good result, one can never be certain that the operation was absolutely necessary.

Neutralization of Toxins.—To neutralize the effects of the germ invasion he believes in promoting bowel and kidney functions to begin with. The administration of antistreptococcic serum has been disappointing, as has the intravenous use of formalin solution. Opening and packing of the posterior cul-de-sac with iodoform gauze was commended. Considerable stress was laid on the good effects obtained from the use of normal salt solution. It is still a mooted question as to the manner in which the solution exerts a favorable influence, but the term *lavage du sang* would appear to be particularly significant in this connection. With the use of unguentum Credé and collargolum the speaker's experience has been limited, but very good results have been reported by many observers from their employment.

Supporting Measures.—To support the patient's vitality he advises that her diet be nutritious to the last degree, but of such nature that the tax put upon the digestive system is reduced to a minimum. He believes strongly in the administration of brandy or whisky in liberal doses, not only for their stimulating effects, but as a food. Ergot, strychnine, and quinine are always indicated. During the past year he has also prescribed a French wine, said to contain seven-tenths of a grain of iodine to each tablespoonful, apparently with great benefit. Temperature should always be controlled by means of cold sponging, and never by antipyretic drugs.

Diagnosis of Gall-stones.—Dr. Irving S. Haynes, of New York City, said that when the classical symptoms, as given in the text-books, of gall-stones are present, the condition has already progressed to a point where the patient is surrounded by many dangers. Certainly it is unjustifiable now to wait for biliary colic and jaundice. Gall-stones are to be diagnosed at a time when the only symptoms present are those of vague indigestion with dull pain in the right upper abdomen, a point of tenderness over the cartilage of the ninth rib with slight yellowness occurring occasionally, especially in a patient in whom there is a previous history of typhoid fever. Jaundice especially must not be waited for as a pathognomonic sign. In 75 per cent. of Ochsner's cases and in over 80 per cent. of Kehr's cases there was no icterus. It must not be forgotten that icterus may occur when there is no stone present from simple catarrhal inflammation from conditions in the duodenum.

Differential Diagnosis.—This is even more difficult than has been thought, as there is no pathognomonic sign. The X rays fail to give positive information in many cases. A previous attack of gastralgia is not an unusual feature of the history and points to the fact that there has been pain in the biliary region referred to the stomach. Not infrequently this pain gives rise to vomiting, and so the diagnosis of gastritis is made. In 80 per cent. of Ochsner's cases the patient had previously been treated for gastritis. When stone is present in the gall-bladder acute infection of the biliary passages is not uncommon, and causes a rapid rise of temperature, followed by a rapid fall. What Murphy calls the hepatic angle of temperature, as indicating biliary infection, may thus be of service. It must not be forgotten that when gall-stones are present a patient may suddenly become critically ill at almost any time. The unwisdom of delay then is manifest and putting off operation only piles up pathological complications that render eventual surgical treatment much more difficult.

Treatment.—The ideal treatment of biliary conditions complicated by gall-stones is the removal of the gall-bladder. Unfortunately, however, this is not always easy of accomplishment. Consequently the operation of opening the gall-bladder and draining is particularly to be commended in old cases. Wherever infection exists drainage must necessarily be employed. It is safer to drain in all cases, since it cannot always be decided whether the bile is sterile. Drainage may be done by means of a tube and strips of gauze. When purulent infection of the biliary passages has taken place, thorough drainage may be effected by an opening through Morrison's pouch behind. If infection has occurred, drainage should be maintained for ten days or more.

Typhoid Epidemic at Ithaca.—Dr. Chauncey P. Biggs, of Ithaca, N. Y., said that no satisfactory proof has yet been obtained of the exact source of the contagious material which caused the epidemic of typhoid fever at Ithaca, at the beginning of the present year. Like the Plymouth epidemic, the cases of typhoid fever in Ithaca occurred only along the distribution of the water from one water company. Part of the town was supplied from another source and a number of the inhabitants obtained their water from wells. None of these suffered from typhoid fever. The snow melted toward the end of December and several freshets occurred, so that organic material found its way into the water supply. About the middle of January typhoid fever declared itself, toward the end of the month it was clear that there was an epidemic, and the epidemic was at its height at the beginning of February.

Considerations of Infection.—All the cases that occurred late in the epidemic were milder than the early ones. This would seem to be due to the fact that those infected required more prolonged exposure to contagious material, because of better resistive vitality. It may have indicated, however, a more lengthened incubation of the disease. A secondary epidemic of typhoid fever occurred in July from an infected well. This well became contaminated through a sewer pipe. The cases that occurred followed one another over a period of eleven days, though evidently the people affected had all been taking the contagious material into their systems for the same length of time.

Urinary Dangers.—It was clear that the greatest precautions would be necessary to prevent the spread of the disease. Most people were easily persuaded to take proper precautions. Those who took them realized the wisdom of this course, and usually escaped the disease. As regards disinfection, care of the urine is quite as important as that of the stools. It has been shown that in at least one-fourth of the cases the urine contains typhoid bacilli in large numbers in almost pure culture, and that they continue to be excreted for a long time after the convalescence has set in.

Cancer of the Rectum.—Dr. Wiggin presented a case of cancer of the rectum which he had operated upon five years ago. While doing the extraperitoneal operation the bowel gave way above and he had to open the abdomen. The sigmoid was found to be involved so the lower gut was swept out. Notwithstanding the apparently hopeless prognosis of the case, the patient has now lived for five years, and there are no signs of recurrence. She has been examined by a number of prominent gynecologists who say that no signs of malignant disease exist at any place.

Sewage Disposal.—Dr. Charles B. Tefft, of Utica, N. Y., read a paper on sewage disposal as a means of

purifying the water supply of the cities and towns of the State. He said that the constant growth of population in this country would eventually make it extremely difficult to obtain pure water if the present system of simply emptying sewage into the water courses continues to be practised. Practical experience has shown that by sand filtration sewage can be rendered harmless and an amount of precious manure material obtained. He suggested that this method should be adopted by even the smaller towns in order to prevent their contaminating the water courses of the State.

Removal of the Upper Jaw.—Dr. D. P. Austen, of New York City, presented a patient from whom he removed the upper jaw over thirty years ago. The operation was done for necrosis of the jaw, due to phosphorus. The man had been a worker in a match factory for some sixteen years. The scar was so little visible as to be but a slight source of disfigurement. Practically nothing in the man's appearance indicated the absence of the upper jaw. During the course of the operation a clot lodged in the man's trachea and for a time he ceased breathing. One of the physicians who was present hastily snatched a feather from a feather duster and tickled his throat, forcing him to cough, removing the clot and restoring respiration. At the time of the operation, Lister's principles of antisepsis were little understood in this country, but the cavity was packed with lint that had been soaked in weak carbolic acid and glycerin, and the result was excellent.

American Surgery and the Jawbone.—Dr. Charles N. Dowd called attention to the fact of how little deformity was caused by so serious an operation. The scar was very suitably placed and was nearly invisible. The branch of the facial nerve to the mouth had not been cut, hence there was good control of the sphincter of the mouth. American surgery has done much to advance the knowledge of surgery of the jaws. Wood's discovery, that after removal of the lower jaw the bone would grow again if the periosteum were left, was one of the most important bits of progress in surgery made in America.

Dr. J. W. Gouley presented specimens from a case of osteosarcoma of the jaw, removed successfully, and followed for five years without recurrence, and also from a case of phosphorous necrosis of the jawbone. Dr. Wiggan recalled the fact that Professor Langenbeck asked to have the specimens from Wood's case of removal of the jawbone with subsequent regrowth exhibited at the German Surgical Society, where they were received with the greatest interest. The sight of a skull with two jawbones, both of which properly belonged to it, being considered a great curiosity.

Dr. J. A. Bodine, of New York City, said that in operations upon the jaw it is possible to secure bloodlessness by passing a small rubber band around the carotid as a temporary ligature. If these cases are treated without dressing they heal more kindly than with dressing. The dressing is almost sure to become soiled with the secretions from the eyes or nose or the mouth, and thus become a source of infection.

Indications for Treatment of Pneumonia.—Dr. DeLancey Rochester, of Buffalo, N. Y., said that pneumonia is now considered to be an infectious disease whose principal local lesion is in the lung. Besides the local condition there is a toxemia more or less intense which may affect particularly the heart and the kidney. Death takes place either because of the toxemia, or the invasion of so much lung as to make respiration impossible. The toxins present in the circulation cause a degeneration of the myocardium and also interfere with the elasticity of the blood-vessels, which reacts to make the work harder on the heart. The consolidated lung causes overwork of the right heart so that the organ often gives out. The toxins may affect the brain, or may by overloading the kidneys induce uremia, causing additional symptoms.

Treatment.—The first indication is the relief of the toxemia. This must be accomplished by elimination, but as the kidneys are already irritated by the disease, stimulating diuretics are out of the question, and the bowels and skin must be called on to relieve them. The sweat of the crisis and the critical diarrhea, shows nature's employment of these methods. Mild catharsis is best accomplished by calomel. The skin may be made active by a hot mustard foot-bath, which should be given beneath the bed-clothing with the patient's knees bent and without moving him. It should be continued for from thirty to forty-five minutes. Meantime cold cloths should be applied to the head. The mouth should be cleansed with mild antiseptics because of the presence of the *Diplococcus pneumoniæ*. Considerable quantities of water should be given in small amounts at short intervals. The room in which the patient is should have direct sunlight and fresh air. Vigorous local treatment should be employed to relieve local congestions in the lungs For this purpose leeches or dry or wet cups will be found to delay the progress of the disease until other portions of the lung clear up. If more than one lobe of the lung is affected, oxygen should be employed. In cases where there is deep toxemia, the hypodermatic use of normal salt solution or its injection by the rectum, though this is less effective, may be employed. Dr. Rochester protested against the use of digitalis with any idea of aborting the disease, as it will always run its course.

Elimination the Keynote.—Dr. A. A. Smith said that elimination must be the keynote of the treatment of pneumonia. It is not possible to abort the disease, though it sometimes aborts itself. Dr. Smith is surprised at the discussion of the treatment of pneumonia without a mention of the salicylates and creosote. Personally he has found the salicylates only a disturbing factor for the digestion. He has seen benefits from creosote, however. He does not consider that the toxemia exerts its effect directly upon the muscles, but acts also upon the nervous site, thus lowering muscular tone. It is for this reason that he employes strychnine very freely. Alcohol in doses of six to eight ounces in twenty-four hours is often useful, but in elderly people and in alcoholic subjects rather less than more than this should be employed. One member of the medical profession in New York considers his life to have been saved in pneumonia by the administration of seven quarts of whisky in $3^{1}/_{2}$ days. Dr. Smith is opposed to the use of the plunge bath and prefers the cold pack, reaching from the axilla to the trochanters. The water employed should be about of the temperature of 90° F. In order to relieve the heart the blood-vessels should be dilated and for this nitroglycerin is the best remedy. The ammonium salts disturb the stomach much more than does the carbonate of ammonia.

Pneumonia as a General Disease.—Dr. W. P. Northrup said that pneumonia affects not only the lung, but the kidney, the heart and the mucous membrane of the intestines, as well as other organs. Treatment must be guided by this newer view of the disease. The poultice around the thorax should be relegated to the limbo of castoffs. He has seen a child with a temperature of 105° F. wrapped up in a poultice so tight that it could scarcely breathe, and sometimes with a tympanites which pushed its diaphragm up still further, interfering with respiration. The most important single factor in the treatment of pneumonia is the admission of fresh air in such quantities as almost to have the patient living in

the open air. It would be well if pneumonia patients could be put out on the lawn.

Dr. Bailey, of West Virginia, said that the maintenance of the external temperature is the main factor in the cure of pneumonia. When called to see children suffering from pneumonia he engages to pay their burial expenses if they die while under his charge. He keeps the temperature of the room constantly at 90° F.

Dr. DeLancey Rochester, in closing the discussion, said that he believes in venesection and employs it freely, but uses cupping for the local effect. As the salicylates are poison, and as the system is already suffering enough from poison, he does not believe in the use of the salicylates. He does not wish to be misunderstood with regard to alcohol. It is often abused to the detriment of patients.

Arteriosclerosis and the Optic Nerve.—Dr. Charles Stedmann Bull, of New York, called attention to the influence of arterial degeneration upon the vision. There are three types of arteriosclerosis: The cardiac, with early symptoms of heart insufficiency; the renal type, in which kidney symptoms early become prominent, and the diffuse type, in which rupture of the arteries in the brain is apt to be an early symptom. In the renal type changes in the retina are seen early, and in the diffuse type the eye symptoms are apt to be of help in the diagnosis of the condition. In the degenerative disease, as tabes, early eye symptoms are often warnings of the process long before any other symptoms occur. When hardening of the arteries occurs it is not unusual to find central defects of vision due to the fact that the hard artery presses upon the optic nerve, causing loss of function in its fibers. Retrobulbar degeneration may even take place in these cases. The only satisfactory treatment is to improve the general condition, and as far as possible prevent the progress of the arterial degeneration.

Dysmenorrhea.—Dr. Charles Bonifield, of Cincinnati, said that painful menstruation is either of uterine origin, or its tubal ovarian constitutional reflex. All of these etiological factors may act together, even in mild cases, to produce a form of the disease not easy to cure. When dysmenorrhea is of uterine origin it is often due, especially in young women, to failure of development of the uterus, the so-called infantile uterus, with long narrow cervix, which prevents the issue of menstrual fluid. Not infrequently in these cases there is a sudden development of symptoms which shows that an accompanying endometritis is the direct cause, though there has been for a long time the predisposition to dysmenorrhea because of the anatomical condition. Inflammatory conditions around the tube and the ovaries causes pain during the congestion incident to the menstrual period, and this is the source of the pain in these cases.

When infantile uterus exists it must be treated by dilatation and curettement if any endometritis is present, though the general condition must be improved by tonics, long hours of rest, cold baths and a nutritious diet. In these cases the condition is made much worse by sex hunger. Plays, novels, pictures and associations that are apt to be sexual excitants should be forbidden and the patient counseled to be careful to entertain, as far as possible, only wholesome thoughts.

Ehrlich's Theories.—Dr. Richard C. Cabot, of Boston, Mass., said that no discovery in medicine is likely to occupy as large a place in the medicine of the future as Virchow's cell theory, unless it be Ehrlich's recent theories with regard to the blood serum. Certainly what he has pointed out with regard to the serum supplements the cell doctrine in a very wonderful way. A half century from now his discoveries will be considered the greatest of this period.

Previous Theories as to Blood Serum.—Dr. R. C. Cabot said that no substance was considered more inert in its way than blood serum. It was looked upon as a background for corpuscles, but was considered to have little individuality. It consisted of a solution of salts in water, but scarcely more. The first discovery of importance was that of its action as a ferment. It was found to convert starch into sugar slowly, but surely. In 1888 Nuttall pointed out the bactericidal powers of blood serum. This discovery attracted very little attention, however, until after the invention of diphtheria antitoxin by Behring and Roux, when serum came into prominence and became a subject of serious study by many pathologists. When it was found that other antitoxins were not as likely to prove successful as that for diphtheria the subject lost some of its interest. Ehrlich, however, continued to devote his attention to it and the result was his brilliant theory, which is now a theme of such universal interest in medical circles.

Toxins and Antitoxins.—A toxin is a filtered sterile product of a bacterial culture. It is strongly poisonous and if injected into the body does not remain in the blood, but attaches itself to the body cells. It has a selective action, each toxin selecting a special set of cells. The toxin is inert while it is in the blood, but becomes intensely harmful when combined with the cells. There are animals who are immune to toxins, yet possess no antitoxin. This mystery was not easy to explain and it was hard to understand how there were so few toxins capable of production in cultures. As a matter of fact only three toxins have been found. Where there is no toxin it is impossible to produce an antitoxin.

Immunity.—The toxins become attached to cells as the armature attaches itself to the magnet. Ehrlich suggested as an explanation of this the theory of side-chains. The term is borrowed from the molecule of benzol, the so-called benzol ring, the free hydrogen atoms of which represent the side-chains of the cells. When a toxin enters the blood, its chemical components unite with the side-chains of certain cells, and if the cell has more than sufficient side-chains, the toxin becomes neutralized.

Serum Dissolvents.—When animals are immunized to certain bacteria the blood serum develops the property of dissolving those bacteria. Analysis of the serum possessing this power shows that there are two elements in it, one of which can be destroyed by heat. This element, however, can be replaced by simply adding fresh serum to the heated liquid. One of these elements has been called the immune body, because produced in the process of immunization, and the other the complement, because it completes the resolving quality of the serum, though of itself only a natural constituent of the serum. This immunity against bacteria because of the dissolving power of serum can also be obtained against any other foreign cells, besides bacteria. The red blood corpuscles of animals, for instance, will be destroyed by human blood serum. The goat can be immunized, to use the term that became familiar when the process was studied with regard to bacteria against the red blood corpuscles of a sheep. If the blood serum thus immunized be kept on ice, the immune body finds its way to the red cells that have been added and only the complement remains dissolved in the supernatant liquid. This question of immunizing against foreign cells may have a very practical application in the problem of cancer. An animal can be immunized against liver cells, or red or white blood cells, and therefore very probably against epithelial cells. Cancer is an overgrowth of epithelial cells with a consequent poisoning of the system and immunization might well prove protective.

Other Practical Applications.—It is difficult to distinguish human from lower animal blood. Heretofore the only means of recognition has been by measuring the corpuscles and as, for instance, those of the dog are very nearly the same size as those of man, there was always some doubt in the case. Now the medicolegal expert keeps a guinea pig immunized against the red cells of human blood. When the suspected material is added, the serum drawn from this animal precipitates the corpuscles if they are from human blood. This settles absolutely the question as to the medicolegal value of a stain that is suspected to be blood. Dr. Cabot added that it is not quite true to say that no animal blood is precipitated by the serum of an animal thus immunized, for it has been found that monkey blood is so precipitated. This gives a new light on the problem of the relationship of the monkey to man.

Precipitation and Agglutination.—The quality in the blood serum, which produces the precipitation described is called precipitin. A serum can be prepared that will precipitate the white of an egg, not of any egg, but the white of an egg of a particular bird and of no other. In the same way a serum can be prepared that will coagulate the milk of a particular animal. Agglutinin is the property of blood serum by which it causes a clumping of red cells, or of bacteria, or of white cells, or of any other cells in a liquid. This, too, is specific, that it is not true for any and every set of white cells, but for a special set from a definite animal. The complexity of blood serum can thus be appreciated. Instead of a simple liquid material containing salts and some soluble albumin in a biological sense, it becomes the container of an almost indefinite number of potencies, each of which is specific and produced by a definite biological process. Agglutinin is the principle by which thrombi are formed, and it may easily be understood that further study of this product will lead to the recognition of the measures necessary for the prevention of thrombotic processes, which, as is well known, are often very serious and so far have been unaccountable. It is even possible that methods may be discovered by which the agglutinin action will be overcome and thrombi redissolved without danger. At the present time, it is considered that such a disease as pernicious anemia is due to some product existing in the serum which causes a solution of the red blood corpuscles. It is due in a word to the presence of an autohemolysin in the blood. There is chance, therefore, that a serum may be discovered which will neutralize this.

In concluding, Dr. Cabot dwelt on the biological field for investigation that has been opened up by studies in serum. The closer animals are to man, the more nearly does their serum resemble his in its properties. On the other hand, the farther away animals are in the zoological scale the more intensely different is their reaction, in a poisonous way, to human blood serum. Eel serum, for instance, will dissolve the red blood corpuscles of man and really acts as a poison. Snake serum will do the same thing, and there seems no doubt that snake venom derives many of its extremely poisonous qualities very naturally from the fact that it is a derivative of the serum of the snake.

Minus Cylinders in Nervous Cases.—Dr. F. W. Higgins, of Cortland, N. Y., described some cases in which minus cylinders sometimes of rather high diopter had been prescribed for patients needing quite another correction for the improvement of their vision. In most cases the patients were suffering from nervous diseases and had tried several sets of glasses, none of which had done them any good, while the minus cylinders usually proved sources of irritation and discomfort. In one case a school teacher was said to be suffering from movable kidney, which could not be found, however, on careful palpation. She was so discouraged as to be ready to give up her work. Her case proved to be one of mixed astigmatism, requiring special treatment. In one case there had been difficulty for a long time, and the eyes were evidently the seat of a serious reflex, but the underlying cause was manifestly muscular and was treated successfully by exercise.

(To be Continued.)

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Twenty-ninth Annual Meeting, held at Memphis, Tenn., Oct. 7, 8 and 9, 1903.

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Chronic Interstitial Nephritis.—Dr. R. Alexander Bate, of Louisville, Ky., gave a definition of this disease, after which he referred to the anatomical changes occurring in the different forms of nephritis. The indications for surgical treatment appeared to the essayist to be limited to cases complicated by a malposition of the kidney, and to those cases in which medicinal measures had failed to arrest the destruction of the epithelium of the tubules.

The Use and Abuse of Fresh Air and Over-feeding in Tuberculosis.—Dr. W. H. Prioleau, of Asheville, N. C., pointed out the importance of supplying fresh air and nutritious food to each patient, according to the comfort of his body and the power of his digestion, remembering always that the personal equation entered into each case that was under the care of the practitioner.

Technic of Mirror Sight.—Dr. Allen De Vilbiss, of Toledo, Ohio, discussed the subject of why the general practitioner should understand the technic of mirror sight, and offered a few suggestions how to learn it.

Principles in the Treatment of Chronic Otitis Media Purulenta.—Dr. John F. Barnhill, of Indianapolis, stated that the principles upon which successful treatment of this disease must be based were both surgical and medical, and did not differ materially in their application from the use of these methods for similar conditions in other parts of the body. All aural discharges were curable by these methods, except those due to tubercle or cancer, and such cure would be simple and easy were it not for the fact of the concealed and inaccessible situation of the disease. A positive diagnosis of the conditions present was of the first importance. Drug application or surgical interference was likely to be very unwisely directed until first the cause of the discharge had been discovered. Only those most highly skilled in aural diagnosis could hope to treat successfully many cases of chronic otorrhea. If, after all parts had been thoroughly treated that were accessible to surgical and medical measures through the route of the external meatus, the disease continued, sound surgical principle dictated that the disease should be followed to its origin and thoroughly eradicated. This necessitated in most instances the radical mastoid operation. Wilde's incision or gimlet trephining of the mastoid was not based upon sound surgical principles, and should be entirely abandoned. Only that thoroughness of modern surgery in general should have any place in a consideration of the principles of otological surgery.

Dr. J. A. Stucky, of Lexington, Ky., said the fact that so much ignorance prevailed in the twentieth century among general practitioners regarding diseases of the middle ear, or otorrhea, was a reflection on the profession. There were those who still believed in the use of laudanum and sweet oil, yet it was well

known that laudanum had no place as a local application in a chronically discharging ear. Furthermore, sweet oil or any oil, except glycerin, was positively contraindicated. He emphasized the importance of thoroughly cleansing the ear, saying that while this was apparently a simple procedure, nine times out of ten it was not half done.

Naso-pharyngeal Adenoids.—Dr. J. A. Stucky, of Lexington, Ky., after discussing this subject at considerable length, presented the following deductions: The obstructive and non-obstructive adenoid tissue, when diseased, was a menace to health, hearing, mental and physical development, and should be radically dealt with. It was far more serious in its effects than disease and enlargement of the faucial tonsils. Frequently when the pharyngeal tonsil was thoroughly removed, the enlarged faucial tonsils rapidly assumed normal size and function. While this was not the rule, he had seen it occur so frequently that it was safe to say it was far more than the exception to the rule. The technic of adenectomy was simple, as compared with many other surgical operations, but should be just as conscientiously carried out. When carefully and thoroughly done, the results obtained were only equaled by some of the so-called major operations performed by the general surgeon.

Dr. A. J. Ochsner, of Chicago, said the ultimate harm to patients, if adenoids were left, was very great, as they were constantly exposed to the absorption of septic material, or extension of the infection into the Eustachian tubes. The presence of adenoids gave rise to deafness in a large proportion of cases in children, although the condition was usually considered as a complication of scarlet fever.

Dr. J. F. Barnhill believed there were affections of the stomach which arose from the existence of adenoids. While adenoids underwent atrophy very materially at puberty, yet the atrophy was to a great extent in the pharynx. The throat enlarged at this period to accommodate the adenoids better, but examination of the throat revealed in the vault of the pharynx a large cavity with many fissures, constantly filled with muco-purulent or cheesy material. The patient either coughed or spat a good deal, or else permitted this to enter the stomach and create havoc in that organ. Nearly 95 per cent. of the ear discharges that came from the Eustachian tube were the result of obstruction and infection in the adenoids themselves. When it was realized that the greatest per cent. of all ear diseases was due to adenoids alone, from a causal standpoint, it was very important to remove the cause.

Dysmenorrhea.—Dr. Emil Ries, of Chicago, after discussing the unsatisfactory condition of the present therapeutics of dysmenorrhea, described the Fliess treatment of the so-called nasal dysmenorrhea. The importance of suggestion and the toxic effects of cocaine were reviewed in their possible bearing on the treatment.

Penetrating and Perforating Gunshot and Stab Wounds of the Abdomen.—Dr. John Young Brown, of St. Louis, discussed the preparation of the patient, the search for visceral injuries, the control of hemorrhage, irrigation and drainage, closure of incision, and then reported nine cases of perforating wounds of the intestines, with six recoveries and three deaths. One death was due to shock. In this case the injury was so extensive that the patient never reacted. The second case entered the hospital with general peritonitis, and while a perforation was overlooked, it was probable that the result would have been the same if the injury had been repaired. He thought the third case should have been saved. Of wounds of the liver, five cases in all, four recovered and one died. This case died three hours after operation from shock, which was the result of hemorrhage. The case of wound of the pancreas recovered. To these cases he added eight where laparotomy was performed, and no injury to the viscera found. This made a total of 23 cases, with 19 recoveries and four deaths.

Dr. H. H. Grant, of Louisville, Ky., said that the most important factor of all in the consideration of gunshot wounds was pretty well accepted by the profession, namely, when perforation had occurred, the abdomen should be opened promptly. The earlier the better. Should the perforations of the intestine be close together, or where there was much destruction of the intestine, it was better to resect at once rather than attempt to suture the wound and probably have leakage or subsequent contraction, which would require a second operation. In all cases in which there was perforation of the intestine, thorough irrigation of the abdominal cavity should be resorted to.

Dr. Wm. Cline Borden said that any civil surgeon would hesitate to operate on a suspected case of penetrating gunshot wound of the abdomen if he felt sure he would infect the abdomen after it was opened, and this was exactly the point the military surgeon had to bear in mind. Under the conditions which obtained in military surgery, in a considerable proportion of cases it was impossible to open the abdomen in the field hospitals without infecting it.

Dr. A. J. Ochsner said the reasons why the essayist had obtained such phenomenal success were, (1) he had seen the patients reasonably early; (2) the operations were performed with system; (3) he had made a sufficiently large incision to enable him to know positively that he had not overlooked any perforation, except in the one case mentioned.

Dr. Emil Ries said the paper was a milestone in the history of the treatment of abdominal gunshot wounds, which had been the opprobrium of surgery for many years, not on account of the imperfect work of surgeons, but owing to the unfavorable conditions under which surgeons received cases.

Dr. Arch. Dixon, of Henderson, Ky., pointed out the important lesson taught by the paper, namely, it would encourage every general practitioner to give his patient an opportunity to recover, and by resection of the intestine and the use of the Murphy button, he was reasonably certain the country physician would be encouraged to operate on some cases, and probably would save lives in the future that would otherwise be lost.

Surgery of the Thyroid; Historical and Experimental, Illustrated with One Hundred Stereopticon Slides.—Dr. B. Merrill Ricketts, of Cincinnati, read an exhaustive paper on this subject. He drew the following conclusions: (1) The thyroid is oftener abnormal than normal in size, shape, number of lobes and accessory lobes, more frequently on the left side. (2) The physiological function of the thyroid and its secretions and relation to other glands are not understood. (3) There may be but one lobe, which may be situated anywhere in the anterior, lateral, or posterior portion of the neck, or it may be intrathoracic, subclavicular, or postscapular. (4) It is the most constant of all the glands in animal life, and all vertebrates are subject to the same laws concerning it. (5) Absence of the thyroid at birth results in cretinism, and its destruction by disease, or otherwise, in advanced life induces myxedema. (6) The cause of parenchymatous goiter is unknown. (7) It may develop in fetal, infant, child, or adult life. (8) All animal life is subject to it. The cause of exophthalmic goiter is unknown. (9) Patient may or may not have protrusion

of eyeballs. (10) Lesions of restiform body in rabbits and dogs, and probably all other animals, will induce exophthalmos and tachycardia, also tremor, polyuria, glycosuria and salivation. (11) Medicaments are of no avail, except to palliate. None cured. Animal extracts are most satisfactory for palliation. Surgery offers the only means of relief. (12) Thyroidectomy is the operation of choice, is done more quickly, with less mortality, and better results. (13) Concretions may be osseous or calcareous. (14) Cysts should be removed by thyroidectomy, whether they contain blood serum, or pus of parasitic, benign or malignant origin. (15) Gangrenous and tubercular thyroid tissue should be freely excised. (16) Syphilitic gummata may be congenital or acquired, and should be subjected to syphilitic remedies to which they will yield. (17) Transplanted segments of thyroid tissue will, more or less, contain life. (18) Electricity in any shape is not only useless, but very detrimental, in that it causes the formation of adhesions, which greatly interfere with subsequent surgical operations. (19) The use of the seton, and incision into the thyroid are seldom indicated, except for the removal of concretions or foreign bodies. (20) Injections of crystals, solutions, or cautery of any character, into the thyroid for any purpose should not be tolerated. Like local applications of any character, they should be condemned and abandoned. (21) Division or resection of the thyroid isthmus does not cure. It has no place in thyroid surgery, and should become obsolete. (22) Partial thyroidectomy is the proper term, as the entire gland is seldom removed. (23) Chloroform, local anesthesia, and the use of cocaine for local anesthesia are the most desirable. (24) The mortality is less than 1 per cent. in the general application of thyroidectomy. It is the operation of choice. (25) All thyroid tissue should not be removed unless malignant. (26) Regeneration of thyroid tissue, which will secrete thyroidin, is just as impossible as the regeneration of a finger. (27) Death from hemorrhage in thyroidectomy need not occur, as blood vessels of any size or in any location may be closed by ligature or forceps. (28) Ligation of the thyroid arteries is ineffectual and should be abandoned. (29) Compression of goiter sufficient to be beneficial will occlude the trachea and larger blood vessels of the neck. (30) Trachectomy is indicated when the goiter presses upon the trachea or blood vessels, producing alarming effects, and then it should be done only to palliate until thyroidectomy can be performed.

Extra-uterine Pregnancy.—Dr. A. H. Cordier, of Kansas City, Mo., discussed the pathology, diagnosis, and treatment of this condition. In ten years he had encountered 54 cases. Intraperitoneal was to extraperitoneal rupture in the proportion of three to one. The diagnosis of ectopic pregnancy prior to rupture was attended with great difficulty and was rarely made. The question of treatment of these cases was so thoroughly settled as to admit of very little discussion. The operation of choice was a median suprapubic section, with removal of the diseased structures. Vault drainage in ectopic gestation was an incomplete procedure, attended with much danger at the time of the operation, leaving the woman with a pathology that would in most instances continue to produce disagreeable or dangerous symptoms until it was completely removed.

Ectopic Gestation.—Dr. Anderson Watkins, of Little Rock, Ark., reported a case with complications. (1) The points of interest were the typical history; a long period of sterility succeeding a normal pregnancy; the absence of menstruation for four months; enlargement of the breasts; morning sickness; shedding of the decidua, and finally a feeling on the part of the patient as though she were pregnant. (2) The evident repeated ruptures of small extent, followed by sepsis. (3) The impropriety of waiting a week after diagnosis to operate. (4) The use of drainage and irrigation. (5) The complicating nephritis probably of toxic origin. (6) The intercurrent malarial infection during convalescence, and also the intestinal disturbances which were a constant drawback to improvement. (7) The location of the pregnancy, primarily tubal, although much disguised after rupture, and the exudation of plastic lymph.

The Causes of Occasional Failure of Operation to Cure Gall-stone Disease.—Dr. Wm. J. Mayo, of Rochester, Minn., said with a single exception, to which he referred later, all of the cases in which results were less perfect than were desirable, occurred in complicated cases, and it could be laid down as an axiom that delay in seeking surgical relief was the direct cause of the complication. It was the general experience that complicated cases usually had symptoms during a period sufficiently long to have made the diagnosis possible before the development of serious lesions, and that an operation at that time would have been safer and the cure more certain. He referred to the clinical fact that a small number of patients who had had a cholecystostomy performed would have a colic or two following operation, and sometimes accompanied by transient jaundice. He had seen this most frequently during the first month or two after the patient was discharged from the hospital. The most common cause of future symptoms was incomplete removal of stones. Stones in the cystic duct frequently escaped attention, and it was only after several such misfortunes that he began to exercise greater care in exploring this canal. The parts were deeply situated, and as these patients were often obese, it was not easy to locate such a calculus previous to the development of the Robson technic. In most of the cases of stone impacted in the cystic duct, cholecystectomy was indicated. One source of failure of cholecystostomy to cure was from secondary obstruction of the cystic duct, preventing free drainage of the gall-bladder down through the passages. This might eventuate in a mucous fistula, or in repeated attacks of colic, as the gall-bladder secretions were periodically forced through the strictured canal. In septic cases, drainage was necessary for a long period of time, and if the fistula was allowed to close too quickly, severe symptoms might ensue. He had twice had to reopen and re-establish drainage in septic cholecystitis. Both cases were colon infections. Stones were often overlooked in the common duct, as they might lie quiescent for years. The jaundice might be very slight, and in some cases not noticeable. The gall-bladder in the meantime might become obstructed at the cystic duct, so that this organ might be enlarged and cystic, with calculus at the neck, and nothing to call attention to the common duct stone. Chronic pancreatitis might exist at the time of operation, and to obtain a good result drainage must be long-continued. Cancer could also be said to be secondary to stone formation, and might take place after cholecystostomy, or, being present, might be mistaken for inflammatory disease. All thick-walled gall-bladders should be looked upon as suspicious, and as they were functionally useless, cholecystectomy should be done rather than cholecystostomy, and in this way many early cancers would be found and cured. Persistent biliary fistula usually meant obstruction of the common duct. Everyone understood the importance of not attaching the gall-bladder to the skin. In the early days persistent biliary fistula was usually due to a mucocutaneous suture. This practice was now obsolete. The turning in of the margins of the incision of the gall-bladder, and draw-

ing a purse-string suture closely about the drainage tube in a similar manner to a Kader gastrostomy enabled healing of the fistula to take place most promptly after removing the drain. Secondary operations had been comparatively safe in his experience. The patient had become accustomed to the condition and the adhesions formed a protective barrier. Separation of the adhesions, particularly about the liver, resulted in considerable hemorrhage. Rather prolonged gauze pressure usually checked the oozing as the blood pressure in the liver was very low and enabled completion of the operation. Most of the cases required a light gauze drain protected by gutta percha tissue at points of contact, with the stomach or intestines, to prevent troublesome adhesion to the gauze. Deep drains should be anchored with catgut to prevent displacement by movements of the liver, as effected by the diaphragm. The catgut became absorbed before the time for withdrawal. The drains should not be removed too early, six to twelve days being the usual limit as to the time of withdrawal.

The Diagnosis and Operation for Gall-stones.—This topic was discussed by Dr. W. D. Haggard, of Nashville, Tenn. The most valuable local sign was hypersensitiveness under the tip of the ninth costal cartilage. The best way of eliciting this sign was described. A distinct tumor was not often felt, and was therefore not diagnostic of gall-stones. In long-standing cases of inflammation in and around the gall-bladder, an ill-defined tumor was present, but the tenderness precluded its exact definition. Hydrops from a stone in the cystic duct gave the typically enlarged gall-bladder, and empyema was also characterized by tumefaction. Stones in the gall-bladder without inflammatory or other complications were never attended by enlargement, and empyema was also characterized by tumefaction. An enlarged gall-bladder meant there was no stone in the common duct, as enunciated by Courvoisier. This was a most valuable differential sign. In biliary obstruction manifested by chronic jaundice, an enlarged gall-bladder meant that the obstruction was not due to a stone. Jaundice following attacks of biliary colic was not necessarily due to calculous obstruction, but was usually caused by an inflammatory turgescence of the bile tract that offered a certain resistance to the outflow of bile. The author reported a case which illustrated this point. The complications of gall-stones were next considered, and among other things the essayist stated that aside from the difficulty of discriminating between gall-stones and certain stomach, appendix or kidney lesions, it should be remembered that they might coexist with any one of them. He narrated a case of coincident biliary and renal calculi in which the diagnosis at first was very much involved. The technic of the various operations on the biliary passages was described.

Dr. H. H. Grant said whenever the existence of disease of the gall-bladder was suspected with anything like reasonable probability, an exploratory operation was justifiable. It was more prudent to resort to this measure than to allow the disease to continue until such serious complications had arisen as were mentioned by both of the essayists. He had found the gall-bladder much more accessible since carrying out the suggestions of Robson of increasing the incision toward the xiphoid cartilage, so as to make the liver more accessible, and to command a better view of the ducts themselves.

Dr. Lewis S. McMurtry stated that during the last month a patient had been lost after an operation for gall-stones. It was a late operation. The patient had no jaundice. He removed forty-four stones from the gall-bladder. The gall-bladder and the adjacent ducts were matted together with old adhesions. He passed his finger along the cystic and common ducts, and worked out a number of stones from the cystic duct. The gall-bladder was much contracted by long-standing inflammatory changes, and he felt the patient was in good condition to recover. Just as soon as the patient came out from under the influence of the anesthetic, he developed symptoms of intestinal obstruction, and died on the fifth day, with well-marked symptoms of intestinal obstruction. Post-mortem examination revealed seven stones outside of the duct, and the duodenum closed by a band of adhesions, which, he presumed, made traction upon the gall-bladder and ducts, the suturing making it taut, so that it increased the obstruction from which the patient died.

The Prophylaxis of Tetanus.—Dr. S. C. Stanton, of Chicago, contributed a valuable statistical paper on this subject. Prophylaxis was considered by him under five heads: (1) The enforcement of existing laws regarding the sale of toy pistols and other dangerous toys. (2) The enactment of laws by Congress, State legislatures, and municipalities prohibiting the manufacture and sale of toy pistols, blank cartridges, dynamite canes and caps, cannon crackers, etc. (3) The open treatment of all wounds, however insignificant, in which from the nature or surroundings there was any risk of tetanus. (4) The immediate use of tetanus antitoxin in all cases of Fourth of July wounds, wounds received in barnyards, gardens, or other places where the tetanus bacillus was likely to be present, or tetanus infection to occur. (5) The injection of tetanus antitoxin as soon as tetanic symptoms became manifest.

Indications and Technic of Prostatectomy.—Dr. G. Frank Lydston, of Chicago, pointed out that the senile prostate was an atrophied prostate. Catheter life lasted about five years, although Reginald Harrison had put it at four years. In referring to the pathology of prostatic hypertrophy, he expressed the belief that the tumor was purely adenomatous at the outset. Several specimens of prostates which had been removed by him were exhibited. He had no hesitation in saying that early operations on the prostate in otherwise healthy subjects were no more dangerous than interval operations for appendicitis. The perineal operation should be performed whenever practicable, but he was aware that there were cases which could not be dealt with successfully by this route; therefore, it might become necessary to do a combined perineal and suprapubic operation.

Everyday Surgery.—Dr. Alexander R. Craig, of Columbia, Pa., described a few cases of gunshot wounds he had seen in his general practice.

Dr. H. J. Whitacre, of Cincinnati, discussed the Pathology and Treatment of Gangrene of the Lower Extremities.

Surgery of Pulmonary Gangrene.—Dr. L. L. McArthur, of Chicago, after reporting three cases representing three varieties of gangrene, presented the following conclusions: (1) That since by medical treatment 80 per cent. of the patients die, and in those operated about 20 per cent., efforts should be surgical. (2) That while it was anatomically possible to separate the pleura from the chest wall, it was tedious, difficult, and often futile (due to puncture), and therefore, not much valuable time should be lost in such efforts. (3) That circular suture combined with gauze pressure packing for forty-eight hours is the best means of inducing adhesions. (4) The X-ray might give valuable aid in localization. (5) Great care should be used in the selection of cases for operation, but when localized

and single, the most desperate cases should be given a chance, as they frequently recovered with drainage.

The Present Status of Stomach Surgery.—Dr. A. J. Ochsner, of Chicago, said that in the diagnosis of surgical diseases of the stomach great difficulty was occasionally found in eliminating cases suffering from gastric disturbances due to general neurasthenia, because the latter condition was frequently the result of gastric disease, which could be relieved by surgical means. Among the conditions which simulated stomach disease, gall-stones undoubtedly stood first in point of frequency, and not infrequently the adhesions accompanying the presence of gall-stones resulted in a distortion of the pylorus, which virtually caused an obstruction. One condition which the surgeon encountered occasionally was locomotor ataxia, with marked pain in the region of the stomach. This condition was easily detected during a careful examination, but it had occasionally been overlooked. Of all the operations employed in stomach surgery, gastro-enterostomy was the most commonly indicated, because it supplied drainage of the organ, and as the want of this drainage was the cause of most of the surgical diseases of the stomach, its accomplishment must necessarily be of the greatest importance. Pyloroplasty was still under observation. Mikulicz, Finney, and a few other surgeons had spoken well of the operation in selected cases of cicatricial constriction of the pylorus. The author's own experience had not been satisfactory with this operation. The method introduced by Finney was undoubtedly the best. The results of pylorectomy would undoubtedly be more and more satisfactory, because these patients were likely to come to the surgeon before the carcinoma had advanced to the hopeless condition usually encountered at the present time. The results of Mikulicz, Kocher, Czerny and a few others were even at the present time sufficiently satisfactory to warrant the operation. Gastrectomy was indicated in only a very small number of unusual cases. Gastrostomy was indicated in all cases of obstruction of the esophagus due to carcinoma in which starvation was imminent. The patient received a great amount of comfort from this operation. As to gastro-duplication, this operation would hardly again receive any prominence, because the same end could be obtained so much more certainly, safely and easily by making a gastroenterostomy. As to elevating the stomach in gastroptosis, this operation was on trial. It had not obtained a permanent position, although a few surgeons had spoken well of it. The writer's own observations and a study of the literature of the subject had forced upon him the opinion that in cases in which severe pathological conditions of the stomach existed, which could not be relieved medically in a reasonable period of time, and which could neither be traced satisfactorily to a neurosis not secondary to gastric disease, nor to other conditions, it would seem proper to attempt relief by the use of surgical treatment early in the course of the disease.

Treatment of Tuberculous Joints.—Dr. David C. Peyton, of Jeffersonville, Ind., said the surgical treatment of tubercular joints presented for consideration the following operative procedures, according to the state of advancement of the joint involvement: Arthrotomy, arthrectomy, excision or resection, and amputation. By the early and free opening of the affected joint, thus insuring free drainage, and thoroughly irrigating it with a hot normal saline solution, the writer had obtained very satisfactory results. The irrigation should be repeated daily for a week or ten days, or even longer, according to the degree of involvement. Even where the process had proceeded to suppuration or beginning necrosis, one might expect most marked benefit from this plan of treatment, and which was especially to be commended in all patients under eighteen years of age, for by the more radical operations the surgeon might destroy the epiphyses, with consequent arrest of development or growth. However, in the advanced state of the disease, whether in the adult or the child, the more radical operations were not only advisable, but imperatively demanded, to save usefulness of limb, and sometimes life. Where necrosis with fistulæ had formed, their removal by arthrectomy or excision was insisted upon. It was especially in the smaller joints that the most satisfactory results were obtained by arthrotomy and arthrectomy.

Treatment of Compound Fractures, Immediate and Remote.—Dr. Frederic A. Besley, of Chicago, discussed the causes of these fractures and the pathological conditions usually met with. He divided the treatment into the (1) primary treatment of the wound; (2) the application of an immobilizing dressing; (3) subsequent dressings of wound; (4) methods of procedure in the event of suppuration; (5) treatment of non-union of the fragments. These several divisions were taken up and expatiated upon.

The X-ray in Fractures.—Dr. Duncan Eve, of Nashville, Tenn., said that at present the X-rays were of more assistance in the investigation of the pathology of fractures than in their treatment, and the more precise the knowledge of the pathology, the more satisfactory the treatment. The exact diagnosis of fractures of certain bones without an X-ray examination was always open to doubt. In order to secure the best results from the Roentgen rays, not only must the apparatus be good, but the man who uses it must have experience.

GERMAN SURGICAL SOCIETY.

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(Continued from Page 767.)

Cancer of Stomach and Intestines.—W. Petersen is firmly convinced that gastric and intestinal cancers grow from one center, as serial sections show a continuous relationship between all parts of the tumor, since a sharp line of demarkation between carcinomatous and normal cells is found everywhere and since a purely interglandular growth is frequently encountered. The peripheral portions are thus unsuited for the study of histogenesis, nor is this method of growth compatible with a parasitic theory. In the stomach extension is generally within the wall, and the pylorus does not act as barrier; in the intestines the tendency is more to extend away from the walls into the surroundings. Probably carcinoma cells left behind after operation do not always give rise to recurrence. The following interesting clinical statistics were collected. In 248 operations for rectal cancer the mortality was 13 per cent. Permanent cures were achieved in 18 to 20 per cent. Thirteen patients lived more than ten years. In 214 gastro-enterostomies for cancer, the mortality was 35 per cent. at first; in the last 100 it was only 18 per cent. The operation prolongs life four to five months. In 57 resections the mortality was at first 35 per cent., later 17 per cent. The most successful cases here lived twelve, eleven, five and four years. Resection is not more dangerous than gastro-enterostomy since the danger of pneumonia is not so great. The chances of a radical cure are greater and even where recurrence takes place, life will be prolonged for nine months. König does not believe that cancer cells enclosed in

lymph-nodes are destroyed, though they may remain latent for twelve to thirteen years.

Abdominal Resections of the Rectum.—Schloffer describes an abdominal method of resecting the rectum for carcinoma which permits of removing all the diseased gut and involved glands more readily than any operation from below. It is especially indicated in high tumors and lean individuals. Kümmel first does a laparotomy to free the mesorectum. The tumor is then removed from below.

Spleen Surgery.—Jordan demonstrates a number of spleens that were removed successfully.

Operation for Stenosed Papilla.—A case suspected of malignant tumor of the papilla vateri was operated by Körte but when the duodenum was opened, the cause of the jaundice and distended gall-bladder were found to be a stricture at the lower end of the choledochus. It was split and a tube then passed into the pancreatic duct which permitted a close study of the pancreatic secretion. With empty stomach 14 to 18 c.c. per hour were secreted, but five hours after the ingestion of food the amount increased to 50 c.c. The proteolytic ferment formed only on admixture with intestinal juice and the latter also increased the action of the saccharifying substance. In another case of cicatricial stenosis the patient died thirteen days after operation of hemorrhage from a gastric ulcer. Two cases operated for carcinoma of the papilla died a few days after excision.

Subcutaneous Rupture of Biliary Passages.—Six weeks after F. Hahn's patient had been run over there was extreme emaciation, enormous swelling of the abdomen and considerable dyspnea and tachycardia without fever or jaundice. On laparotomy, chronic peritonitis with free bile in the abdomen was discovered, which made a subcutaneous rupture of the biliary passages probable. The site of rupture could not be found but firm tamponade effectually closed the opening and eventually healed the tear.

Pathogenesis and Therapy of Acute Pancreatic Hemorrhage.—The results of operation for acute pancreatic disease have been so unsatisfactory that the majority of surgeons prefer to await the chronic stage. Bunge, however, reports a typical case of hemorrhage which was saved by tamponade of the bursa omentalis from in front and tamponade beneath the mesocolon. The convalescence was complicated by profuse suppuration and glycosuria. Bunge recommends operation in the acute stage, provided the pancreas is tamponed off so as to avoid infection of the general peritoneum. He believes that most of the hemorrhages are due to embolic processes since experimental injection of oil into the pancreatic vessels caused similar lesions. Von Beck saw three cases of pancreatic hemorrhage secondary to operations on other parts of the body.

A New Cystoscope.—A disadvantage of instruments which photograph the interior of the bladder lies in the fact that the bladder cannot be viewed at the same time. Hence L. Casper constructed a cystoscope with double prism which will also permit two observers to view the same field and hence is invaluable for demonstration.

Disinfection of Silk Catheters.—Boiling catheters in a concentrated solution of ammonium sulphate does not alter them, but the crystals which adhere are disagreeable. Heusner then experimented with a number of other substances and found that saturated sodium sulphate and 10 to 15 per cent. sugar solution behave similarly. The best results were obtained by heating the catheters in liquid paraffin over the water-bath. Ureteral catheters must be preserved dry but the ordinary catheters can be kept in the oil.

Contributions to Genito-urinary Surgery.—In the 14 cases of prostatic hypertrophy operated upon by Kutner, according to Bottini's method, there was marked improvement in ten. During the operation there are hardly any dangers if the assistance is good; after the operation fever or hemorrhage may appear but is generally not serious if the after-treatment is managed properly. Kutner then demonstrated a bladder stone weighing fully a pound and three ounces. Its removal necessitated large lateral incisions into the bladder and the use of the obstetrical forceps. A sterilizer for elastic catheters and a demonstration cystoscope were also shown.

Beginning Prostatic Hypertrophy.—A. Rothschild's contribution on the early changes in prostatic hypertrophy has already been published in *Virchow's Archiv.*

Urethra in Prostatic Hypertrophy.—By injecting gelatin into the bladder from the renal pelvis, Reerink found stenosis of the orif. int. vesc. in two cases, marked tumefaction of the median lobe with dilatation of the pars prostatica in 3, and dilatation of the orific. int. in the remaining 11 with uniform distention of the entire pars prostatica up to the normal pars membranacea. A relatively high position of the bladder is not characteristic for enlarged prostate; it may also occur when the bladder is filled from the ureters. In the 3 cases with large median lobe a valvular closure at the urethral orifice did not take place even when more than a quart was injected. In cases of wide internal orifice with dilated prostatic urethra, the speaker thinks our present methods inadequate. Bottini's method in particular does little good here. In some cases, median section with drainage is sufficient, for the majority, however, perineal prostatectomy is indicated.

Perineal Prostatectomy.—In the cases seen by Voelcker, a prostatectomy was only done because systematic catheterization was impossible on account of severe cystitis, frequent hemorrhage, incontinence, chills, complications on part of the testes, etc. The small, firm hypertrophies with marked obstruction were generally treated according to Bottini, while large, soft tumors seemed to be more suited for prostatectomy. In performing this operation one must strictly remain within this capsule and care must be taken not to divide the anterior wall of the urethra. The bladder is drained from the perineum for eight days, after which a permanent catheter is placed into the urethra.

Perineal Cystotomy.—On account of the high mortality of suprapubic cystotomy, R. Frank recommends a perineal method of opening the bladder, which is performed as follows: A transverse incision is made between bladder and rectum up to Douglas' fold and the latter then pushed upward with the fingers. By introducing specula a large portion of the floor of the bladder may be opened. The operation is particularly indicated in stones and other foreign bodies, papillomata and cancer. The after-treatment is simpler and shorter than in the suprapubic operation, since rest in bed is necessary only for eight to ten days.

New Canula for Bladder.—Werckmeister's instrument was constructed to avoid accidental slipping of the drainage tube out of the bladder. It is made of silver and closely resembles a tracheal canula. Where permanent drainage is desired this instrument fills a long-felt want. It may also be used in stomach and gall bladder fistulæ.

Methods of Diagnosis in Renal Disease.—A most excellent résumé by Kümmel gives a comprehensive idea of the value of recent methods (X-ray, cystoscopy and cryoscopy) in the diagnosis of pathological conditions in the kidneys. We no longer diagnose renal

stone and then search in vain for the calculus after the kidney is bisected, nor do we watch patients after nephrectomy with anxiety for fear that the other kidney is incapable of removing all the waste products. Renal diagnosis can now be practiced with a precision which is hardly possible in any other part of the body. Every renal stone, no matter what its composition, will throw a shadow upon a good Roentgen plate. Conversely, it may be stated that where there is no shadow, no stone will be found. It is necessary to have the patient in a good position and to use a soft tube and to employ several plates rather than one, so that there will be no question about shape and position. Usually the shadow is found several centimeters lateral to the vertebral column, somewhat beneath the twelfth rib at the level of the second lumbar vertebra, unless the shape or position of the kidney itself has changed. Even renal sand will throw a distinct shadow. The plate should be well illuminated when examined and sometimes inspection by means of an opera-glass is desirable. The advantages of the cystoscope and ureteral catheterization are too well known to require much discussion. Sounding the ureters is not a dangerous operation and is to be preferred to the various segregators on the market, unless the openings cannot be found. In children there may be some difficulty in introducing the instrument, but a girl of fourteen years and a boy of fifteen years could be readily cystoscoped. Narcosis may here be necessary, but in adults a 1- to 2-per-cent. eucaine or a 1-per-cent. antipyrin solution will reduce the sensibility of the bladder even in nervous individuals. Equally satisfactory results were obtained with the determination of the electrical conductivity of urine and blood and more particularly with cryoscopy which has proved an accurate measure of the osmotic concentration. Where blood is to be examined 15 or 20 c.cm. are removed from the arm by means of a sharp canula, then defibrinated by means of a platinum ring and finally frozen in the Beckmann apparatus. The bulb of the thermometer must be entirely submerged in the fluid without touching the bottom and the fluid must be kept in constant motion. The mercury will first drop, then will suddenly rise and come to a stop at a point which indicates the freezing-point of the fluid examined. A small δ and a capital Δ are used arbitrarily to denote the freezing-point of blood and urine respectively. In normal cases δ was found to vary from 0.53 to 0.57 and in diseased conditions, such as typhoid, normal figures were also obtained, provided the kidneys were not affected. The mechanism by means of which the blood-concentration is regulated must be a very delicate one, since in one case the freezing-point was again normal four hours after a venesection. The freezing-point of urine varies within much wider limits; thus 0.9 to 2.3 must be looked upon as normal. When both kidneys were undoubtedly diseased (chronic nephritis, bilateral pyonephrosis, tuberculosis, etc.) δ varied between 0.58 and 0.81. The severest cases gave the highest figures and in progressive cases there was a distinct parallelism between the symptoms and the value of δ; Δ fluctuated between 0.9 and 0.2, though in one case 1.0 was obtained. In non-compensated cardiac failure, eclampsia, diabetic coma, epilepsy during the attack and cirrhosis of the liver the concentration of the blood may also be increased but these conditions can be easily ruled out. Misleading figures were only obtained in severe cachexia. In the third group of cases, where only one kidney is affected, cryoscopy is undoubtedly of the greatest value as it indicates at once if nephrectomy is permissible. The blood may here be used for examination or else the ureters are catheterized and the freezing-point and percentage of urea determined of both urines. Normally the figures are approximately alike on both sides, but in unilateral affections marked differences exist. Sometimes the renal function returns rapidly after a stone is extracted, thus in one case of nephrotomy, Δ rose from 0.52 to 1.02 in ten days after the operation. In the cystitis of cases with enlarged prostate, cryoscopy is of great prognostic value. Thus in one case there were no symptoms pointing to pyelitis yet the freezing-point of the blood was found to be 0.71. The patient died soon afterward and an advanced pyelonephritis was found at autopsy, which had been entirely latent during life. It is well-known that uremia may set in suddenly without prodromal symptoms but cryoscopy will enable us to suspect the imminent danger and to avoid operations which would certainly be fatal. On the other hand, a normal freezing-point will justify a prostatectomy or some similar measure for the patient's relief. Recently the statement has been made that chronic nephritis occasionally may be a unilateral process, amenable to surgical treatment. In a large number of acute parenchymatous and chronic interstitial forms examined by Kümmel, no marked differences in the urine from both sides was found, except that the amount of albumin occasionally varied. Owing to the fact that a nephrectomy was never attempted where the freezing-point of the blood made renal insufficiency probable, the mortality of kidney operations was considerably reduced. Kümmel's mortality, before cryoscopy was introduced, was 28 per cent., at present it is only 8 per cent. The value of cryoscopy was demonstrated again and again at every autopsy and Kümmel believes it to be one of the most valuable methods ever applied to surgical diagnosis.

Functional Renal Diagnosis.—Barth's paper is on the same subject as Kümmel's but his conclusions are not quite so enthusiastic. The urine of the diseased or of the more diseased kidney always gives a lower freezing-point. The difference between the two figures will give an idea as to the degree of destruction. If both sides are diseased, a marked difference will indicate that one side is much more involved than the other. Where there is only a slight difference the process is in its incipiency, provided the freezing-point is near normal. If the examination takes place at a time when the total excretion of molecules is small, we may get a slight difference, though one kidney is normal and the other much destroyed. Thus in one case of renal tuberculosis, $\Delta = 0.76$ on the diseased side and 0.82 on the well side. After phloridzin injections the sugar excretion is generally somewhat less marked on the side of lesion. When completely absent, the kidney was almost totally destroyed. As a rule, however, the extent of the lesion cannot be gauged by the degree of glycosuria. There is as yet no really absolute method which will express renal sufficiency in figures and ofttimes a simple chemical and microscopical examination of both urines will tell as much as cryoscopy and phloridzin. Functional diagnosis, however, has a decided value in differentiating between renal stone and interstitial nephritis with hemorrhage and colicky pain, since the former is usually unilateral and the latter generally bilateral, though symptoms occur only on one side.

Electrical Conductivity and Functional Renal Diagnosis.—F. Löwenhardt thinks that functional renal diagnosis is not so accurate as some believe. The vicarious and compensatory action of heart, intestines, salivary glands and skin in kidney disease is a factor which we cannot measure accurately. Cryoscopy does not take into account the size of the molecule so that there need be no change in the freezing-point in certain severe cases of nephritis where toxic substances with large molecules are held back in the blood. Löwen-

hardt generally prefers to determine the electrical conductivity, which is always higher on the healthy side and is a constant factor in normal kidneys. He then demonstrated a patient with severe pyelonephritis on the left side and a large pyonephrosis on the right. The results of all examinations contraindicated operation. A catheter introduced into the right ureter, drained the abscess for a while and then suddenly stopped functionating. Since the patient's condition became worse, right-sided pyelostomy was done. Repeated attempts at reintroducing the catheter from below were finally successful, and after six months the fistula closed and the patient was much improved.

X-ray Photographs of Renal and Biliary Stones.—All stones of the kidney and ureter give good X-ray pictures, no matter what their composition. Treplin has not, however, had the same success with gall-stones on account of their softness and their unfavorable position. Stones in the gall-bladder are especially unsuited, since the bile itself will throw a shadow. Stones in the cysticus and choledochus may give good pictures if the patient is not too stout.

Anatomy of Ureters.—Zondek points out that the ureter is not a cylindrical tube but presents certain physiological stenoses and dilatations. The former may prevent the passage of a catheter, while the latter may permit a stone to lodge. The peculiar shape of the ureter is congenital and the changes which take place after birth are slight. An anomaly which is rather frequent is the presence of a double pelvis at the mesial side of the kidney; here only half of the organ may be diseased so that a resection would be indicated. A second kidney is generally present, since the anomaly is not caused by a union of two kidneys but by a splitting of the ureters. It may be difficult to detect the ureters or pelves during operation since they are much smaller than where only one is present. A number of less frequent anomalies were then demonstrated.

Subcutaneous Renal Injury.—The large number of cases recently published prove that slight renal injury is frequent and of good prognosis if treated expectantly. In many there is no hemorrhage and only transient albuminuria. Even the most severe tears heal readily if suppuration does not follow. According to Riese the prognosis is anything but favorable, however, where the entire organ is contused, the vessels torn off or the peritoneum injured. Hemorrhage, abscess-formation and peritonitis are the main dangers here. The hemorrhage is apt to be most severe if the peritoneal cavity is opened, since the blood will find little resistance. The symptoms of severe hemorrhage are the constitutional signs of acute anemia, together with abdominal tenderness and the appearance of a movable dulness in the dependent portions of the abdomen. Nephrectomy is only indicated if the bleeding cannot be checked by ligature and tamponade. Subsequent operations for aneurism, suppuration, necrosis or sacculation is often necessary. The mortality is as follows: In 85 cases treated expectantly, 11.7 per cent.; in 79 cases with nephrectomy, 18.9 per cent. Körte advises expectant treatment in subcutaneous rupture. Von Beck advises rest, ice, ergotin and infusion. He was never obliged to do a primary operation.

Case of Renal Sequestrum.—Löwenhardt observed a case of ascending pyelonephritis caused by pneumococci which seemed to demand operation until pieces of renal substance were voided through the ureter and the process came to an end.

Metastases of Renal Tumor in Bronchial Lymph-nodes. During a nephrectomy for hypernephroma, Billroth accidentally opened the pleural cavity. Ten years later the patient was seen by P. Clairmont with severe pulmonary symptoms (dyspnea, hematemesis, fever). At autopsy the lymph-nodes were found to be the seat of a hypernephroma which had remained latent for so many years owing to unfavorable surroundings.

Treatment of Cryptorchism.—According to Riedel, the greatest difficulty in treating retained testicle, is the management of the spermatic vessels. They must generally be separated from the vas and dissected free for quite a distance into the pelvis before the testicle can be pulled down sufficiently. A mattress-suture is generally sufficient to fix the organ in the scrotum. Heidenhain generally applies a truss if the testicle can be pulled in front of the outer ring. König mobilizes the spermatic cord by dividing the vasa epigastrica and the fascia through which they run.

Advances in Gynecological Operations.—By means of hot water—alcohol—sublimate disinfection of the hands, Dührssen could reduce the mortality of gynecological operations to 1.2 per cent. Even this low mortality could have been avoided if the patients had presented themselves earlier for operation. In vaginal operations the mortality was nil. In 76 cases Dührssen saw pregnancy with normal course after vaginifixture for retroflexion so that there is no excuse in still favoring Alexander's operation. The least dangerous operation for fibroids is vaginal extirpation of the tumors by means of a vaginoperineal incision, bisection of the uterus, morcellement and enucleation. For tumors the size of a head and larger, ventral hysteromyomectomy is best. Drainage, when necessary, should be by way of the vagina by means of iodoform gauze. In suppurative infiltration of a broad ligament, the ligament must first be dissected free from the uterus.

Vaginal hysterectomy for carcinoma is indicated only when the tumor involves the body.

A New Splint.—Vulpius demonstrates a new splint of aluminum which is light, portable, easily cleaned and can readily be modeled to any size or shape. Bender also showed a practical splint consisting of wire surrounded by layers of plaster-of-Paris bandage.

Massage Treatment of Recent Fractures.—Jordan says the massage treatment requires much time, patience and experience but its advantages are so obvious that it will in time replace the older methods.

Case of High Shoulder from Muscular Contraction.—An eighteen-year-old girl, observed by Manasse, was suffering from a tonically contracted levator anguli scapulæ, which caused considerable deformity. After dividing it and the rhomboids and resecting the upper internal scapular angle, the shoulder dropped to its normal position but in seven weeks the condition recurred. The muscles were then resected, after which the cure was permanent. Subsequent clonic twitchings required galvanism.

Rare Case of Lymphangioma Cavernosum.—In Katholicky's patient the left hand and fingers were much swollen, the skin everywhere tense, thin and translucent. Small cysts projected above the surface between the fingers. The forearm was shortened and swollen, its skin reddish-brown and rough. By firm pressure on the hand the swelling could be displaced up to the elbow so that the thin remnants of phalanges and metacarpal bones could be readily felt. A radiograph clearly* demonstrated advanced destruction of these bones and of the radius and ulna. Complete loss of function was present in the extremity, but pains were not complained of. The condition existed at birth and had gradually increased in size during fourteen years. Payr has employed magnesium arrows with good result in facial hemangioma. Extirpation is here facilitated by multiple thromboses. Von Bramann has observed a similar case, which he improved with injections of one per cent. carbolic acid. Von Beck reports a lymphangioma of the arm, which sloughed after an enteritis.

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ORIGINAL ARTICLES.

MASTOID DISEASE AND EXTRADURAL ABSCESS.

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OF all the intracranial complications of mastoiditis, epidural, or, as it is more frequently called, extradural abscess, is by far the most frequent and on account of its close relationship both to meningitis and sinus thrombosis, it occupies a unique place among the remote pathological changes resulting from extensive necrosis of the mastoid cells. While extradural pus collections consist essentially of a localized purulent meningitis in which the suppurating area is limited to a small surface of the meninges, yet a distinction should be made between a true epidural abscess, that is a collection of pus localized and confined between the inner osseous wall and the brain membranes and the so-called extradural suppurations which are more or less frequently found during an extensive mastoid operation, where the dura is in part exposed and forms a portion of the inner wall of the purulent cavity in the mastoid.

This latter condition is quite often discovered when the inner wall of the mastoid is reached and, as a rule, is so seldom accompanied by any definite symptoms, or any signs indicative of its presence, that no special clinical significance can be ascribed to it as a definite morbid entity, although, of course, it adds, to some extent, to the gravity of the mastoid necrosis. When the dura is exposed in this manner, it results as a consequence of the bone erosion extending from without inwards, while the true extradural abscess ultimately manifests itself by a reverse process, that is, by eroding the bony areas with which it is in contact, from within, outwards.

The relation of epidural abscess to meningitis is that of a small to a large area of inflammation of the brain coverings; in the one case, the meninges become adherent to the inner table of the skull and completely walls in the purulent collection to a somewhat limited area, while on the other hand, no such protective barrier to the infective agencies is afforded, and a diffuse meningitis results. When the abscess cavity, as is frequently the case, is in close proximity to a purulent accumulation of the external wall of the sinus, the latter is exposed to the dangers of thrombosis. Although the dura and the sinus wall may, for a considerable length of time, successfully resist the disintegrating action of the purulent inflammatory process, yet eventually if the pus collection be not relieved by surgical measures, infiltration and the development of granulation tissue in immediate proximity to the large venous channels, will sooner or later develop and bring about a limited destruction of both these tissues. But as the course of the epidural abscess is essentially chronic, the development of extensive adhesions between the dura, pia and brain substance necessarily ensues and thereby confines the purulent infection to a somewhat limited site. In many of these cases where the tissue destruction has been extensive and the erosive action of the abscess has necrosed in part, the inner mastoid wall, the original mastoid empyema and the epidural abscess surrounding the lateral sinus, are thus brought into contact and a large single pus cavity is formed, involving all these structures, so that when the mastoid operation is performed, the pus from the intracranial complication is evacuated simultaneously.

While the essential primary cause of the dural abscess is that of the mastoid empyema, yet other morbid changes acting as secondary etiological factors are also evident in many cases. Pachymeningitis, leptomeningitis and sinus thrombosis are frequently found combined with the condition under discussion, as the consequence of the abscess, yet not infrequently they may occupy an intermediate place in the causative train of pathologic events. The mastoid infection under such circumstances, involving a small area of the dura and producing a limited pachymeningitis externa which undergoes suppurative changes, and finally resolves itself into an uncomplicated epidural abscess, or in addition, the sinus also becomes infected and a thrombophlebitis adds greater gravity to the dual affection.

The time during which the mastoiditis has existed before the intracranial complication has developed, varies greatly in almost every case, Grunert in a most careful study of 20 cases, having found 12 from acute and the remaining 8 having developed from chronic aural disease. But many factors enter into this phase of the question and the duration of time existing before the dura becomes infected, depends not only upon the severity of the inflammatory process in the bone, but is strongly influenced by the tissue resistance; the form of bacterial agencies present in the given case, and the direction in which the greatest area of bone necrosis leads, the majority of epidural abscesses occurring in connection with mastoid disease being situated in the posterior cranial fossa.

The usual etiological rationale in the development of these abscesses, is based essentially upon the thin wall separating the lining membrane of the mastoid cells from the meninges, becoming necrotic. This portion of the mastoid then breaks down, usually in the form of a minute sinus and a localized meningitis of a low grade is gradually developed about the affected area, so that when the necrotic portion separates, or by means of the

previously mentioned sinus, the infective material is brought into contact with the brain membranes and the diseased site is completely shut off from the general cranial cavity. Instead of these macroscopic bone lesions in connection with the dura, being present, the inner osseous wall may present no evidence of necrotic changes, as the infection will in this class of cases, be conveyed to the cranial cavity by means of embolic or thrombotic processes in the minute venous channels, so profusely distributed in this region; or, in other cases, one of the larger venous sinuses will be involved as the predominating pathological lesion.

Other pathological elements may also be concerned in the individual case and seriously affect the chances of recovery. Such an instance being reported by Lewis, is a woman of twenty-four years, in whom the extradural abscess was of a tubercular nature, but although it was evacuated, the symptoms still continued and she died under the anesthetic, a week later, while a secondary operation was about to be performed. The abscess may also result from a true osteomyelitis, as described by Pouzat, or, in extremely acute cases, such as in two reported by Preysing, there exists a rapidly developing acute inflammation of the compact osseous portion of the mastoid process. Quite often, therefore, the channels of invasion are more or less devious and the pyogenic material is transmitted through the medial and superior walls of the mastoid process into the cranial fossa.

The following case shows this channel of invasion and also illustrates the development of an epidural abscess as the result of an acute mastoiditis.

F. H., female, aged twelve years. With the exception of typhoid fever four years ago, she has always been robust and healthy. She has never had any trouble either with the upper respiratory tract or ears, until two weeks before she first came under my observation when, during a severe attack of influenza, she complained of pain in the right ear. Examination at this time showed a slight congestion of the manubrial plexus, but no bulging of the drum. Dry heat, applied by means of a Leiter coil, gave prompt relief and the aural symptoms disappeared for one week, when the pain again returned with greater severity than before. The membrana tympani was intensely congested and gave decided evidence of the presence of fluid in the tympanic cavity; a paracentesis was then performed and a quantity of thin, yellowish pus was evacuated. The relief from the pain, however, was but slight, although free drainage from the tympanus seemed well established. The temperature was 100° F., while the pulse was 96 and the respirations were normal. Two days later the aural pain had decidedly ameliorated, the temperature and pulse had returned to normal, and while the aural discharge was scant, no untoward symptoms indicative of the extension of the ear disease were present. The following day, however, the temperature rapidly rose to 103° F., the pulse to 110 and headache was complained of over the entire right side, but especially over the mastoid and to some extent further backward toward the occipital region. The mastoid gave no visible evidences of infection and pressure did not increase the pain, although percussion caused her to complain.

The extension of the tympanic suppuration to the mastoid cells was diagnosticated and an operation was advised. No distinctive signs were present that in any way could be construed as indicating the extension of the disease to the cranial cavity, but the general symptom complex and especially the irritability and restlessness, led us to suspect the presence of some irritation of the meninges, in addition to the mastoid empyema. Under ether and anesthesia the usual mastoid operation was performed. The tisuses over the mastoid presented no abnormal changes, but the cortex was exceedingly dense and great difficulty was experienced in penetrating it.

The pneumatic cells were filled with pus and broken-down tissue, especially in the vicinity of the antrum and inner wall. With the exception of the tip of the process, which was healthy, the bone was almost completely eviscerated and free communication was established with the antrum and tympanic cavity, both of which contained considerable purulent material. After a large cavity had been cleansed out in the mastoid, the inner wall appeared to be healthy and free from caries, except at one point well back, where a minute area of softened bone could be clearly distinguished, in the center of which was a thrombosed vein leading apparently to the posterior cranial fossa. With gentle curettage, this portion of the osseous tissue was readily broken down and gave exit to about a half ounce of pus similar to that observed in the tympanic cavity. The sinus presented no evidence of infection and the abscess cavity was formed by the adhesion of the dura to the osseous wall. The cavity was washed out, the parts packed with iodoform gauze and the usual dressings applied. By the following day all the symptoms had disappeared except the headache, which had greatly diminished in intensity, but there was considerable staining of the dressings from the discharge. This however gradually diminished in amount until the ninth day, when it ceased and the mastoid wound went through the usual course. The results in this case were exceedingly favorable as she made a prompt convalescence and has had no further trouble with the ear.

As previously stated, epidural abscess is the most frequent intracranial complication of mastoid empyema and may be the cause of the sinus infection, or may be responsible for the development of a brain abscess. When the latter is also present and the extradural abscess has been evacuated through the diseased temporal bone and the latter has healed, the path of the otogenic infection is necessarily withdrawn from observation and the recognition of the remaining brain abscess becomes most difficult. While the presence

of epidural abscess is quite frequent, it is also as a rule more easily reached than the other intracranial complications and is certainly more satisfactorily treated.

As regards the frequency of extradural abscess in relation to mastoid disease, Picque and Ferrier claim that more than one-half of all cases originate from this cause. Grunert found suppuration on the outer surface of the dura 26 times in 176 acute cases in which the mastoid operation was performed, while it occurred but 39 times in 573 chronic cases. While Gradenigo in 68 cases of mastoid disease on which he operated, found 12 with endocranial complications and of these, 5 were extradural abscesses, all of which recovered. It is interesting also to note in this connection, that in but one case was marked optic papillitis noted and that was in a case of perisinuous epidural abscess in which however, the sinus was not thrombosed. Jansen reports 148 cases of intracranial suppuration, of which 108 were extradural abscesses and Randall states, that in his experience in ten instances within a year, after trephining a suppurating mastoid, the caries of its inner plate was so great, that it necessitated the exposure of the dura and the liberation of pus between it and the bone.

The two most common sites for the development of the pus collection in the order of their frequency, are first, in the posterior fossa near the vertical portion of the groove for the lateral sinus and secondly, in the middle fossa on the superior surface of the osseous tissue forming the roof of the antral cavity. Should the mastoiditis travel backward the perforation into the cranial cavity will probably be through the thinner tissue of the groove previously mentioned, while in some instances where the mastoid cortex is sclerosed, the tendency for the route of the infection is upward and inward and the epidural abscess thereby develops in the middle cranial fossa.

Of course the dangers are augmented when the pus collection is in close relationship to the sinus, on account of the tendency to the production of secondary inflammation and thrombosis, but even under these circumstances, this does not always follow, as a large abscess may exist in this location without producing the least damage to the sinus. Broca records an instructive case in this connection, in which in a child of eight years, a large abscess surrounded the lateral sinus, yet the mastoid was successfully opened, the pus collection evacuated and recovery ensued. While Kümmel cites a somewhat similar case, in which he opened the posterior cranial fossa, removed the contained purulent collection there and his patient fully recovered.

The abscess may vary greatly in size and while some will contain but a few drops of pus, others may contain an ounce or more, the latter while being strictly localized, will yet at the same time, cover a large area and quite closely resemble a diffuse meningitis.

Like the confused and sometimes vague symptom complex of other otitic intracranial affections, the symptoms present in the early stages of extradural abscess, possess no special characteristics distinguishing them from those of the primary focus of infection in the mastoid process. As the localized meningitis becomes more sharply defined, however, and takes on the aspects of the secondary pus collection, there may occur a sufficient increase in the intracranial pressure to produce some symptoms of diagnostic import. If the pressure is much augmented, the symptoms may indicate an abscess of the brain tissue and be sufficient to render an accurate diagnosis impossible, preliminary to exploratory operation. Or again the secondary infection may be somewhat more extensive than usual and spreading to some extent over the immediate brain meninges, will be responsible for the symptoms of meningitis, to the entire exclusion of those of epidural abscess. On the other hand in both acute and chronic cases, an extensive epidural pus collection may form, with but few symptoms and this takes place not only in those with an extra thick mastoid cortex, but also in some cases where the disintegration of the osseous tissue has been exceptionally rapid.

Körner states that every intracranial suppuration does not always produce symptoms from which safe conclusions as to its location can be drawn. This seems especially the case in extradural abscess, as there are but few characteristic symptoms, although one may suspect the existence of this condition, when in the presence of mastoid symptoms, the aural discharge suddenly becomes less, or ceases entirely and the patient shows signs of meningeal irritation. The two most conspicuous signs in a number of the cases, are severe and continuous headache, frequently localized over the affected area and a moderate elevation of the temperature, seldom reaching above 102 degrees, which undergoes slight fluctuations, but seldom reaches the normal.

In the infrequent uncomplicated cases, pyrexia is very slight or absent as a rule, and for this reason these cases are attended with a greater mortality; although the patient may complain of headache and one or two subjective symptoms, yet without fever and in the absence of prominent aural symptoms, the true condition is not appreciated. Temperature is practically always present when the abscess is extrasinuous, but it must be remembered that a rise in temperature may be due to the mastoiditis and not necessarily to the abscess. If the fever cannot be accounted for by the aural disease alone, then one is warranted in suspecting an intracranial complication. In those cases attended with a high temperature at the beginning and in which other symptoms present indicate epidural abscess, an additional complication in the form of a sinus thrombosis or a meningitis will probably be present. Should the temperature not be sufficiently elevated to suggest either of the latter conditions, the question of the presence of a cerebral abscess will have to be considered, but the absence of localizing signs and the presence of some elevation, instead of a subnormal tem-

perature, will greatly aid in eliminating this factor.

In rare instances, however, localizing symptoms may be present, due to the pressure of the pus collection on adjacent brain areas, but it is extremely uncommon, as the large majority of epidural abscesses do not exert any pressure upon the motor tracts. When such symptoms are present they usually take the form of a crossed paresis, alteration in the sensibility and some minor disturbance in the special senses. An interesting case showing some of these features being reported by Milbury, in which the abscess pressed on the left temporosphenoidal lobe of the brain and produced facial paralysis of the left side, slight paralysis of the right arm and leg, mental impairment and amnesic aphasia.

Pain in the head is one of the most constant and valuable symptoms and is generally present in practically all cases. As a rule it is confined to the side corresponding to the intracranial lesion and often is limited to a localized area. It varies much in intensity and an intermittent headache may for a time, be the only symptom; it is usually more severe than the pain caused by the mastoiditis and is apt to occur in paroxysms. The tissues over the site of the pain sometimes being exquisitely tender even on the slightest pressure and this symptom may in conjunction with others, give some indication of the location of the abscess.

The pulse rate varies with the degree of associated meningeal irritation, and when the latter is prominent, an accelerated pulse is frequent, especially in the early stages, but later when the acute symptoms subside, it is apt to become slightly slower than normal. Schmieggelow reports an interesting case of an epidural abscess in a boy of twelve years, in which the symptoms were a slow pulse, subnormal temperature, nausea, dulness of intellect and headache. The abscess was on the floor of the middle cranial fossa and the patient recovered after its evacuation, while the author states, in commenting on the case, that he has never before found a slow pulse associated with epidural abscess alone. As a rule, therefore, little dependence can be placed upon the rate of the pulse in this affection.

Rigors are rarely present in uncomplicated cases and if they should develop, the presence of a complicating involvement of the venous channels may with considerable assurance be presumed. Although Barr records several cases in which the special features were frequent and repeated rigors with a high temperature, yet no evidence of sigmoid sinus involvement was found. Vomiting is apt to occur when the paroxysms of pain are greatest and it may occur without nausea, but it usually indicates some meningeal irritation and when the abscess is located in the cerebellar fossa, the vomiting is apt to be associated with vertigo or some disturbance of the equilibrium. Both these symptoms have little symptomatic value and like the anorexia, coated tongue and constipation, possess no diagnostic value alone. Slow cerebration, or some degree of mental dulness, occurs only in the later stages and without reference to the location of the pus collection. Its origin is somewhat obscure, but it is probably due to some increase in the intracranial pressure from moderate effusion into the ventricles. Optic neuritis is but rarely found and as a symptom of epidural abscess, the eye grounds afford no information.

As well showing the grouping of the symptoms, the following cases reported by Knapp are instructive. In the first case there was headache, nausea, dizziness and some stupor. The mastoid became swollen and tender and an operation failed to disclose the presence of pus. Four days later, however, there was a free discharge of pus from both the mastoid opening and the ear, with some relief of the symptoms. These, however, returned with a rise of the temperature to 105° F., and death followed. The autopsy disclosing a purulent leptomeningitis of the left temporal lobe and lateral ventricle and an epidural abscess on the inner side of the mastoid and in and about the foramen lacerum. The second case commenced with pain in the forehead, right ear and occipital region, but no fever. A puncture of the drum head relieved the pain and gave exit to a purulent discharge and the symptoms did not again return for six weeks, when pain in the right occipital region recurred, with fluctuation and swelling of the tissues. A large incision was made to the bone and a quantity of creamy pus liberated, while a spontaneous opening was found extending into the intracranial cavity. The patient succumbed, however, five months after the onset of the disease and the necropsy showed that the inner table of the mastoid was absent, while a large cavity filled with pus extended from the outer surface of the lateral sinus to the external cortical fistula. In addition there was also an abscess in the cerebellum.

Little need be said here as to the character of the pus present in the abscess, but in acute cases it is usually yellow and odorless, while in the chronic cases it is apt to be ichorous and brownish or greenish in color.

Even under the most favorable conditions the diagnosis of an epidural abscess is both indefinite and obscure and in many of the cases, there are no distinct symptoms by which the surgeon can recognize the pus collection before operation. The chief diagnostic symptoms are the headache and a temperature which continues after the mastoid has been opened; the condition of the ear at this time may render some information, especially if there is a subperiosteal abscess behind the mastoid, or a variable amount of edema extending backwards to the occipital region. Or, again, when the abscess is located in the middle cranial fossa, the edema may extend above and behind the mastoid, while the latter remains free, but is sensitive to pressure. In many cases evidences of the extradural abscess are only disclosed when during a mastoid operation, a fistula is found leading into the cranial cavity, or the medial wall of the mastoid has broken down. In not a few

of the cases symptoms of meningeal irritation, such as headache, slight rise of temperature, somnolence, pain on pressure, slowing of pulse, vomiting and stiffness of the neck, may lead one to suspect the development of an abscess, but usually these symptoms are indefinite and afford little diagnostic value.

The differential diagnosis between extradural abscess and meningitis may be made by the high temperature, rapid pulse, irritability, general excitement, restlessness and hyperesthesia of the special sense organs in the latter, in contrast with the slow cerebration, apathy and drowsiness in the former. One may find, however, a slow pulse with a temperature of meningitis, and in such cases, both the conditions may coexist at the same time. If the diagnosis still remains in doubt in the presence of meningeal symptoms, lumbar puncture should be performed and if it gives a negative result, then an epidural abscess or a sinus phlebitis, or both, are probably present. Macewen and Milligan state that the symptoms of an extradural abscess always dominate and mask those of a brain abscess, when the two occur together and it is not until the former is relieved by operation, that reliable evidence of the presence of a brain abscess can be obtained.

In a few instances of uncomplicated epidural abscesses, if, after opening a subperiosteal pus collection, a bone fistula is detected, through which a probe can be passed into the cranium, we may be assured that an abscess exists. While in some cases, a doughy swelling forms with some tenderness on pressure about one inch behind the meatus, at the point of exit of the mastoid emissary vein. When this is conspicuous and the other symptoms enumerated are present, in conjunction with the history of the aural disease, it strongly indicates an intracranial complication and we may be fairly positive that we have to deal with an epidural abscess. Grunert believes that an exact diagnosis is impossible and the surgeon must proceed with a diagnosis of probability until the mastoid has been operated upon. Friedreich states that mastoid operations are frequently interrupted by the finding of an abscess between the bone and dura and from the expansile pulsation it is easy to recognize the endocranial origin of the discharge. The dura recedes before the pressure of the pus and an abscess cavity is formed between the bone and dura, which leads to compression of the cerebral substance and sometimes it attains such enormous dimensions that the pus makes its way to other regions. While Bacon states that frequently when operating for mastoid inflammations, the surgeon finds a carious opening just over the sinus, even when the symptoms were only those indicating mastoid disease.

In contradistinction to the probable diagnosis sometimes, though rarely, made by the symptoms alone, there still exists what may well be called the surgical evidences of the disease; in other words, the signs that are found during the mastoid operation indicative of epidural abscess. Green concisely states this aspect, when he says that early operation is advisable, for an exact diagnosis is often impossible and the chances are largely that a fistula through the bone from the ear, will lead directly to the brain disease. This, therefore, gives justification for early exploration of the bone and as the disease of the bone originates from the suppurating ear, the latter is the cavity from which we should explore. Furthermore, as the infected ear requires operation in any case, this operation can readily be combined with an examination of the fistula and the recognition and treatment of the brain disease.

If on opening the mastoid, the pus is seen to pulsate, there is every probability that it communicates with the cranial cavity and after the diseased area here has been removed and a fistula is found, it should be traced to its termination in the epidural abscess. Again in a suspected case where the diagnosis has not been fully determined, the mastoid operation is first performed in the usual manner, the vertical groove for the lateral sinus is then exposed and the sinus is examined and treated according to the pathologic changes found. The course of the sinus is then traced upwards and backwards to its horizontal portion, where immediately above is the middle fossa, while below is the posterior fossa. If the epidural abscess should be found in the neighborhood of the lateral sinus, it is evacuated and dressed in the usual manner, but if no pus collection exists at this point, a flexible grooved director may cautiously be passed in various directions between the dura and the skull, in order to locate an abscess in other positions.

The following case, seen recently, well exhibits the danger a patient may be in from an epidural abscess and yet without sufficient subjective symptoms to warn him to seek early relief:

B. M., male, aged thirty-two years. At the age of fifteen years the right ear became inflamed and suppurated from causes unknown to him. From that time until the past six months, it was more or less constantly moist and at varying intervals, the suppuration would become profuse for a few days, to again be reduced in amount by local treatment. He has always enjoyed good physical health and except for the annoyance of having the ear moist, he considered it of little moment, until six months before I saw him, when the discharge became profuse, fetid and slightly greenish in color. Instead of moderating as it usually did under the routine treatment he had been receiving, it still continued and he began to suffer with frequent headaches over the frontal region. This continued for nearly two months, when the pain in the head disappeared from the frontal region, but became severe over the mastoid. During the next four months, he stated that he lost twelve pounds in weight, had a variable appetite, would have to give up work at times on account of the pain and weakness, and would have variable attacks of fever, but he never had any chilly sensations. Three weeks be-

fore he first consulted me, with all the symptoms continuing and the pain extending further back over the occipital region, an abscess formed back of the ear, which was opened by a small, superficial incision, with the escape of considerable pus. As this afforded no relief to the symptoms and the pus still discharged from both the ear and the incision, he was referred to me for examination. At the time when I saw him, there was a fistula well back on the mastoid, from which considerable pus was exuding and which admitted a small probe but a short distance, evidently on account of its irregular course. The membrana tympani was in great part destroyed and no evidences of the malleus or incus could be recognized. The mastoid was swollen and the tissues infiltrated around the sinus and the entire side of the head well back over the occipital region was extremely sensitive to the touch. He was very nervous, the temperature was 101° F., and the pulse 90, and there was a slight degree of mental dulness, while he states that he had been vomiting for several days past and became dizzy if he moved about much.

In addition to the mastoiditis, the presence of a purulent intracranial collection was so palpable, that an immediate operation was insisted on. The mastoid was opened and was seen to consist of a large pus cavity, the osseous tissue of its interior being in great part destroyed by the carious process, while even the cortex was exceedingly fragile, as the slightest pressure with the curette would suffice to break down the disintegrating bone. Immediately on exposing the mastoid interior the contained pus was seen to pulsate and when this was removed with the necrosed bony tissue and after communication had been established with the antrum and tympanic cavity, a large opening was found in the posterior wall, exposing the inflamed dural surface. This led into an extensive pus cavity between the dura and bone, which was evacuated, thoroughly washed and the sinus was then further examined, but was found to be unaffected. The treatment was the same as in the former case. Evidences of considerable meningeal irritation were present for several days following the operation, but other than this the improvement was marked and as the restlessness and dull ache in the head soon passed away, his convalescence continued uninterrupted and he made a speedy recovery.

In both the cases here reported, the bacterial examination of the discharges showed a polymicrobic infection, but the ordinary pus organisms predominated. Usually, however, in the acute cases, the pneumococcus plays an important part, and in the presence of even minor symptoms associated with this organism, we are justified earlier than in the presence of other organisms, in suspecting the development of an extradural abscess. The relation of the micro-organisms to the intracranial lesion has been especially marked out by Lenert, who maintains that it is the reduction in the virulence of the specific micro-organisms that effects the occurrence of a circumscribed meningitis, the preliminary condition of nearly all brain abscesses. Whereas virulent bacteria, if they ever reach the surface of the dura spread so rapidly over the leptomeninges, that a diffuse meningitis is the speedy result.

The final termination of an extradural abscess, if not recognized, will vary greatly, depending upon the direction in which the greatest destruction of tissue takes place, but they remain quiescent for long periods of time and may finally open externally. In 12 cases reported by Grunert, 4 opened outward and formed a subperiosteal abscess. While Urbantschitsch also records a case which spontaneously evacuated. Very often the epidural pus collection is the connecting link between the ear disease and a more dangerous intracranial complication, while in other instances, it is impossible to say whether the epidural abscess is the cause or the effect of the deeper otitic lesion in the cranium. In the same way it may be closely allied to a leptomeningitis, or sigmoid sinus phlebitis, but in the great majority of neglected cases the dura perforates and the patient dies from a consecutive cerebral abscess, or a purulent sinus thrombosis and leptomeningitis. As regards the spontaneous evacuation of the abscess, Knapp states that it may open into the ear, through the medial wall of the mastoid, the roof of the tympanum, the squama temporalis, or through the occipital bone, above and behind the ear canal.

In recognized cases, the prognosis as regards cure is extremely favorable if the abscess be evacuated by operative procedure and undoubtedly this affection under such circumstances, gives the greatest number of recoveries of any of the intracranial complications of mastoid disease. In Grunert's 20 cases, 11 of the 12 acute abscesses recovered and of the 8 chronic instances, 2 recovered, while 1 died later of pulmonary tuberculosis, 2 were still under treatment, 1 uncured refused treatment and in 2 the results were unknown. The successful issue in the large majority of reported cases of epidural abscess, has been essentially due to operative evacuation.

No other treatment than the surgical release of the purulent collection should be considered and as a guiding principle in operating on these cases, one should always proceed from the primary origin of the infection in the mastoid and trace the course of the disease to its final conclusion in the cranial cavity. As the surgical measures necessary in treating these cases have been to a great extent already mentioned, it is only necessary here to state that the mastoid should first be opened, the abscess located and evacuated, and the dressings and after-treatment should conform with those applicable in mastoid operations.

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PRECIPITINS AND THEIR MEDICOLEGAL USE.

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SCOPE OF DEMONSTRATED PRECIPITINS.

Precipitins for Albumins of Blood.—The original observations from which began the development of the medicolegal serum test for blood were those of Kraus, 1897, who obtained albuminous precipitates in filtered cultures of *Bacillus choleræ*, *B. typhosus*, and *B. pestis*, by the addition of homologous immune sera, and that of Tschistovitch who obtained a precipitate in eel serum by means of anti-eel serum from the rabbit.

Very soon contributions from many sources demonstrated the fact that most but not all animals develop antisera with precipitating properties (precipitins) against most alien bloods. Bordet produced in a rabbit a precipitin for chicken blood, and pointed out the distinction between the precipitating and the agglutinating and hemolytic actions of such antisera. Uhlenhuth secured in rabbits precipitins for the blood of the chicken, beef, and man; Wassermann, Schutze, Stern and many others studied the actions of the precipitins of humanized rabbit blood. Nuttall and Dinkelspiel prepared several blood precipitins, including those obtained by treating rabbits with the blood of the dog, sheep, beef, horse and man. Nuttall later obtained, apparently in the rabbit, precipitins for the blood of the fowl, pig, alligator, turtle, frog and lobster. Grünbaum prepared antisera for the blood of the chimpanzee, orang and gorilla, in animals not stated. Von Dungern experimented extensively with precipitin for crab's blood (*Maja squinador* and *Dromia vulgaris*), developed in rabbits. One of us has found that the chicken produces an active precipitin for human and rabbit bloods. Noguchi found the normal serum of several cold-blooded animals to contain precipitins for other cold-blooded animals and for horse serum, while leaving somewhat uncertain the possible increase of these agents by immunization of such cold-blooded animals. Metchnikoff, Mesnil and v. Dungern, failed to increase natural or produce new precipitins in various cold-blooded animals. DeLisle, working with eel blood, failed to immunize the guinea-pig against this serum as the animals invariably died, but, with more difficulty than Tschistovitch describes, he produced in the rabbit an active hemolysin and precipitin for eel blood, and in the eel hemolysin and precipitin for rabbit blood.

In the experience of the above observers it has not always been possible to obtain in every animal, a precipitin or hemolysin for every other animal blood. Thus Bordet failed in this attempt with guinea-pigs treated with rabbit's blood, but one of us recently secured in guinea-pigs, an active hemolysin and precipitin for rabbit's blood. Nolf failed to obtain a precipitin from pigeons treated with chicken blood, and Nuttall from rabbits treated with cat's blood. These results, in the case of closely related animals, must be referred to the lack of antagonism between the blood of such animals, and in the other case to the excessively poisonous effects of the eel serum.

It may here be noted that Friedenwald found that when an animal is injected with the serum of a closely related animal, the albumins pass rapidly out of the system with albuminuria, while the more distinctly alien blood is retained in the system apparently absorbed by the body cells.

Precipitins for Milk.—From the earliest stages of the study of blood precipitins, investigations have been directed to specific sera antagonistic to other body cells and other forms of albumins. Bordet first produced in rabbits by injections of sterile cow's milk a serum precipitating in slight dilution the albumins of such milk. Fisch prepared specific precipitins for the casein of cow's milk, which failed to affect either goat or human milk. He also injected an emulsion of udder cells and obtained a specific precipitin for the milk of the same animal, and concluded therefrom that milk represents a solution of the gland cell albumins and not merely a filtration through the cells. Wassermann and Schutze obtained in rabbits precipitins for human, goat's and cow's milk, which in moderate dilution proved highly

specific for each variety of milk. Hamburger obtained specific precipitins for both the albumin and the casein of cow's milk, both of which sera acted similarly on beef serum, but the serum obtained after injections of beef blood, had no effect on cows milk. This result indicates that both serum and milk contain receptors which produce precipitins for serum albumin, but milk contains other receptors which develop a special precipitin for the albumin of milk.

That other tissue cells contain the milk-coagulating receptor is indicated by the results of Meyer and Aschoff, who obtained milk coagulins by injections of various tissue cells. While some reports indicate high specificity for the milk coagulins, Moro found that the precipitin developed by cow' milk precipitates also goat milk. Careful dilution of the test serum has apparently not been observed in this field.

Precipitins for Muscle and Bone Albumin.—Schutze produced a specific precipitin for human muscle, which was inert on human albuminous urine or blood serum, but proved hemolytic. Cooked muscle also yielded a similar precipitin, as did also an albumin separated chemically from muscle tissue. Jez and Uhlenhuth have since employed this biological method for the detection of different meats, and Schutze has applied it with some success to the differentiation of bones.

Precipitins for Albuminous Exudates.—Many observers have found that albuminous exudates in pleuritic, ascitic, and hydrocele fluids and albuminous urine, are almost as active in developing precipitins for blood serum as is the blood itself. As such fluids are readily obtainable they are often employed instead of blood for the preparation of blood precipitins for medicolegal purposes, but there are various reasons for avoiding such expedients.

LeClainche and Vallée first employed intravenous injections of urine containing one-half grain of solid albumin per liter. The rabbits suffered considerably from the treatment but after three months their sera actively precipitated urine containing serum albumin. They gave a slight precipitate with urine containing much globulin, but were inert with human blood serum, or serum from the horse, donkey, sheep and beef. Mertens found that injections of albuminous urine yielded less precipitin for the albumins of the urine or blood than did injections of blood. Zuelzer, who also employed highly albuminous urine, concluded that the injected urine must contain some blood albumins but not these exclusively. Biondi found that injections of kidney tissue free from blood yielded precipitins both for blood and for albumins in the urine, while Schattenfroh found that injections of albumin-free urine, if not heated, produced blood hemolysin and agglutinin but no precipitin. A comparison by Dieudonné of the activity of the serum yielded after injections of albuminous urine, pleuritic exudates and blood serum, showed a considerable difference in favor of the blood serum.

Specific Precipitins for Albumins, Globulins and Peptones.—Several observers have endeavored to separate the different proteids of blood and to test their actions apart from the mixtures in which they naturally occur. Nolf separated the plasma from the cells of chicken and dog blood and secured in each case precipitins only from the animals receiving injections of the plasma. He precipitated the globulin twice by saturation with magnesium sulphate and washing, and separated the albumins from the dialized filtrate by the addition of one per cent. Ac. adding NaCl and sterilizing at 56° C. for eight days.

Rabbits treated with the globulin developed a precipitin while those receiving the albumin did not. That the substance precipitated (precipitum) is a globulin he concluded from the fact that the active serum had no effect on solutions of serum albumin but gave abundant precipitates in solutions of globulin.

Biondi failed to obtain a precipitin by injections of serum albumin, but succeeded by the use of the globulin precipitated by $MgSO_4$.

In reference to these experiments it may be remarked that the serum-albumin may have been greatly altered in character during its separation.

Myers secured from rabbits precipitins for crystallized egg-albumin, sheep globulin, beef globulin, and Witte's peptone, by injections of each of these substances. Rather numerous control tests showed these precipitins to be highly specific but not absolutely so. The peptone serum was peculiar in losing much of its activity when heated to 56° C., and on being reactivated by normal rabbit serum, while all the sera agglutinated various blood cells. Pick and Spiro also claim to have secured a precipitin for albumoses.

Uhlenhuth injected chicken egg-albumin dissolved in salt solution and obtained a powerful precipitin which had a slight action on pigeon egg-albumin, and resisted heating to 60° C. for one hour. Feeding the animal for twenty-four days with the same albumin also developed the precipitin, but Moro and Hamburger failed to obtain any lactose serum by forced feeding of young animals by milk. Obermeyer and Pick and Umber separated the different albumins and globulins of the white of egg, and while they all caused the development of precipitins, these precipitins were not specific for the different proteids of the egg. Modica and Corin also obtained precipitins by injections of globulin precipitated by magnesium sulphate. Corin secured the globulins from cadaver blood and ascitic fluid, and demonstrated that the precipitin is also a globulin, and he recommends its preservation in the form of a dry powder containing magnesium sulphate. Strong solutions of this powder he found more active than the fresh serum from which it was derived.

Somewhat dissimilar results were obtained by later observers. Rostocki, Landsteiner and Calvo, found that the serum of rabbits immunized to horse globulin precipitates both globulin and albumin of horse blood. In Michaelis' hands in-

jections of pure globulin gave a serum precipitating globulins only, while injections of pure albumins gave a serum precipitating both albumins and globulins. As he obtained the globulin by partial saturation with ammonium sulphate, his experiments are not exactly comparable with those in which the globulin was precipitated by magnesium sulphate. He failed to obtain a precipitin from Merck's egg-peptone or Riedel's peptone, and points out from the observations of Buchner and Geret that Myers' peptone precipitin probably represents a precipitate of barium sulphate. Tschistovitch also failed to obtain a precipitin for peptones. Ide and Leblanc both report that they have secured specific precipitins for pure albumin and pseudoglobulin of beef blood, and Hamburger claims that the casein and albumin of milk may be separated by their specific antisera.

Obermayer and Pick[2] report that beef serum heated to 60° to 70° C., which destroys its reaction to the antiserum, is capable on injection into rabbits of developing a serum which precipitates not only fresh beef serum but also beef serum heated to 60° to 70° C. By employing such heated sera they secure what may be called a polyvalent serum which may possibly prove of value in testing blood which has been subjected to heat. Likewise beef globulin carefully oxydized at room temperature by potassium permanganate and thus deprived of its capacity to react to normal antiserum will develop a serum which precipitates the oxydized globulins and to some extent the fresh globulins.

The observations of Klein indicate that the precipitins produced by the albumins of the red cells and those produced by the albumins of the serum are not identical.

Finally it should be mentioned that Camus and Bordet obtained precipitins by injections of fibrin.

From the above data it may be concluded that the most active principle of blood in exciting the development of precipitins, is the globulin. Possibly it is exclusively the globulin which possesses this property, but further evidence on this point is required. Peptones, have so far failed to develop precipitins.

Precipitins for Vegetable Albumins.—From the reports of Schutze and Kowarski, it appears that precipitins have been obtained for vegetable albumins, the former using "*roborate,*" while Kowarski's precipitin for wheat albumose acted also on albumoses of rye, peas and barley, but not on that of oats. Connected with the precipitins for vegetable albumins is the entire field of specific bacterial precipitins.

The above series of observations on the great variety of already demonstrated precipitins has been briefly collated for the purpose of presenting the more important results in compact form, but especially to emphasize from the medicolegal standpoint that the existence of specific precipitins is not an isolated scientific fact, but that the discovery of these bodies has brought to light a very comprehensive and entirely new principle in biology.

By virtue of their complex molecular constitution the various members of the different classes of proteids of the animal and vegetable kingdoms are found to differ from each other, not merely in some of their grosser chemical reactions, but by a new series of properties of obscure character indeed but no more surprising and no less definite than that recognized in meats by the sense of taste. Moreover, Ehrlich's conception of the mode of origin of these precipitins and other antibodies has offered a logical explanation of these peculiar phenomena and removed much of the obscurity surrounding them. The factors concerned in the precipitin reaction may now be considered in detail.

Nature of the Precipitin Reaction.

For the full discussion of the principles governing the development and action of precipitins, according to Ehrlich's conception of them, the reader is referred to the original articles of Ehrlich and to the summaries of Ritchie in English and Aschoff in German. Here it need only be said that the precipitins are cast off cell receptors (side chains) of Order II, possessing a stable haptophore group uniting with the coagulable molecule and a more or less labile zymophore group, which exerts a precipitating action on the affected cell or molecule.

As to the nature of the process by which the large proteid molecule is precipitated from solution, recourse must be had to the laws governing variations in surface tension.

The bodies concerned in the development and action of precipitins may be divided into three classes: (*a*) Those exciting the development of the precipitating substance of the serum; (*b*) those constituting the precipitating substance; (*c*) those constituting the precipitate and affecting its formation.

(*a*) Substances Exciting the Development of precipitins.—From the foregoing section it will be seen that this property has been shown to reside in most classes of proteids both animal and vegetable, including serum globulin, and the globulins separated by fractional precitation by ammonium sulphate, [serum-] and egg-albumins, albumins of tissue cells, vegetable albumoses, and gelatine; while mucins and peptones have not yet been included in the list.

From what had previously been shown, regarding bacterial immunizing substances, it appeared likely that of all of these substances the globulins were most active in developing precipitin, and this conclusion has been strengthened by the results of many observers working with blood precipitins. Nolf and Biondi failed to obtain any precipitin from injections of pure serum albumin, while in the reports of many others, who succeeded in this attempt, there has been little effort to compare the activities of the serum on the respective substances injected.

(*b*) What Constitutes the Precipitating Substance.—As has been previously shown for the majority of the specific antibodies, the precipitins belong chiefly or exclusively in the class of

globulins. Yet the studies on which this generally accepted conclusion is based were principally concerned with the antibodies for injected globulins, so that it is perhaps too early to say that all precipitins belong in the class of globulins.

Corin by saturation with Mg. sulph. at 30° C., precipitated the globulins of serum prepared against defibrinated blood and found a 4.5-per-cent. solution of this precipitate more active than the original serum. Michaelis precipitated the globulins by partial ($^3/_{10}$) saturation with ammon. sulph., and found the precipitate to contain practically all the active properties of the serum, and that the dissolved precipitate acted only on globulins, not on serum albumin. Ziemke found the globulins precipitated by ammonium sulphate, and dissolved in soda solution, less active than the fresh serum and therefore could not fully endorse the suggestion of Michaelis to precipitate the globulins in order to preserve the active principle of the serum. Moreover Pick found that the precipitated globulins of typhoid serum deteriorated much more rapidly with age or by heating than did the original serum. The precipitin belonging in the class of Ehrlich's receptors Order II, as already mentioned, contains a more or less labile zymophore group, which may suffer deterioration while the haptophore or cell-binding group is still intact. Thus arise in a variety of ways the inert forms of precipitins called precipitoids.

(*c*) What Constitutes the Precipitum.—That the precipitum from blood serum is a globulin was first claimed by Nolf, from the fact that his antiglobulin serum precipitated a solution of that globulin, but not one of serum albumin. LeBlanc came to the same conclusion from the analysis of the precipitum obtained from solutions of hemoglobin. P. Müller found the precipitum from milk, resulting from the action of its antiserum, to consist of casein. The precipitum also contained the precipitin itself, which he succeeded in extracting in active form by strong acetic acid. Von Dungern precipitated by its antiserum the blood of *Octopus vulgaris* which contains a single albumin, hemocyanin, characterized by a 38-per cent. content of Cu. In the precipitum he recovered a considerable portion of Cu. The dissolved precipitum was non-dialyzable.

The general properties of the precipitum are those of albuminous substances. Tschistovitch found the sediment of eel serum insoluble in water or alkaline carbonates or neutral salts, but soluble in dilute acids and alkalies. It was non-toxic to rabbits. Bordet, Michaelis and others also proved the solubility of the precipitum in dilute acids and alkalies. Uhlenhuth dissolved blood precipitum in NH_4OH and H_3PO_4. On the other hand there is evidence to show that the substance attacked by the precipitin is not necessarily a proteid, but may be merely associated with or derived from the proteids. Thus Obermayer and Pick found that the precipitable substance of white of egg may be altered by frequent crystallization and by digestion with pepsin, so that it no longer gives the biuret reaction, although still precipitating with antiserum. Jacoby and Haussman also digested ricin and abrin with trypsin, destroying the biuret reaction, but the usual precipitate followed addition of antiricin. Their results do not indicate, as v. Dungern says, that the molecule uniting with the precipitin was not originally connected with the natural albumins of the solution, but they at least show that these albumins may suffer considerable alteration without losing their affinity for precipitin, and they have practical bearing on the results of the precipitin test in decomposed blood.

The relative proportions of precipitin and precipitable substance entering into the precipitate may be estimated in approximate degree in the light of certain observations. Linossier and Lemoine found that 25 parts of an active humanized rabbit serum were completely neutralized by one part of human serum, while 200 to 300 parts of rabbit serum was necessary to remove the precipitable substance from one part of human serum. These results do not justify more than the conclusion that the precipitin is usually vastly less abundant than the precipitable substance. From the investigations of Eisenberg and Volk on typhoid agglutinins, it is evident that the absorptive power of agglutinins varies with their dilution, being greater the higher the dilution. This same rule seems to apply to the precipitins and has important bearing on the technic of the serum test.

Artificial and Spontaneous Changes in Precipitin Serum.

Effects of Age.—All observers have found that precipitin sera rather rapidly deteriorate with age, and recommend careful preservation in sealed tubes, on ice, and in the dark. There are, however, very few reports regarding the duration of active properties of serum thus preserved, and the significance of such reports vary greatly with the original strength of the serum. Strube and Uhlenhuth both found serum still active after three months, the latter having preserved his specimen with .5 per cent. carbolic acid. The addition of chloroform commonly recommended prevents bacterial growth, but does not save the serum from gradual deterioration. From such serum Ziemke reports considerably diminished activity after more than three months. Okamoto found his chloroformed serum sealed in glass tubes still active after one month, but inert after two or three months. Corin and Stockis found the dog globulins still active after two months, but do not report on their later condition. Chirokikh found that filter paper soaked in the serum yielded an active precipitin solution after one month.

We were unable to detect any loss of activity of a powerful humanized serum after ten days on ice without preservative. The serum of two beef rabbits kept on ice with chloroform showed no distinct change, one after sixty-three days, the other after eighty days. A powerful humanized

serum kept ten months on ice with chloroform, and which showed a greenish discoloration and had probably become somewhat concentrated by evaporation, still gave an abundant flocculent precipitate at dilution 1 in 30 in two hours in human serum 1 in 100. Controls on heterologous blood were negative in all the above reports. We agree with Ziemke that no method of preservation can replace the advantage assured by working with fresh serum.

Effects of Heat.—Many precipitins have proved comparatively resistent to heat. Jacoby found antiricin active after heating for two hours at 60° C. Myers exposed the antisera of egg albumins and globulins to 56° C. for one-half hour without altering their activity. Tschistovitch found his anti-eel serum less active after heating to 60° C., and inert after heating to 70° C. Uhlenhuth's antiserum for egg albumins was unchanged by heating for one hour at 60° C. Leclainche and Vallée heated their antiserum from albuminous urine for two hours at 58° C., without diminishing its activity. Michaelis destroyed his blood precipitin by two hours' exposure at 68° C. Biondi concluded that blood precipitin serum begins to lose its activity when heated to 65° to 70° C., but if dry resists heating up to 130° C. Eisenberg found the dry globulin active after heating one-half hour at 100° C., but inactive after the temperature reached 130 to 135° C. One of our potent beef rabbit sera was rendered almost entirely inert by heating in a water bath at 55° C. for fifteen minutes, while not a trace of reaction occurred after heating to various moderate temperatures above 55° C. A humanized rabbit serum, however, lost little activity by heating to 60° C. for fifteen minutes, but became practically inert after fifteen minutes' exposure at 65° C. Michaelis has studied extensively the inhibition of precipitin reaction by heated precipitin serum and other agents. He finds that serum heated to 72° C. loses its precipitating properties and also strongly inhibits the action of fresh precipitin serum subsequently added. In smaller quantities the heated serum merely lengthens the time required for the transformation of turbidity into flocculent precipitate. An excess of precipitable substance also prevents the formation of precipitum and rapidly dissolves it when formed. Any albuminous solution in considerable concentration inhibits the action of all precipitin sera.

Action of Chemicals.—Many salts, as NaCl, $MgSO_4$ $(NH_4)_2SO_4$, have no deleterious action on precipitins, and are employed in their separation. Antiricin withstands the action of dilute H_2SO_4, and NaOH, at 37° C. for one-half hour, and is not altered by pepsin and trypsin (Jacoby), but Michaelis destroyed blood precipitin by digestion for one hour with pepsin and HCl, although each of these agents alone was inert. He also removed the calcium from the active serum by oxalic acid without affecting its activity. Pick in his comprehensive studies of typho-precipitin from the horse found it to be destroyed by digestion with pepsin or trypsin, by strong acidification, by urea, by a "few drops" of formalin, while the presence of a remnant of ammonium sulphate rendered the precipitated globulins inactive; the serum was less active in the presence of .8 per cent. salt than in some smaller proportions of salt, and calcium salts played little or no part in the reaction.

Precipitoids.—The spontaneous development or artificial production from precipitins of a substance devoid of precipitating powers, but still capable of chemical union with the precipitable molecule has been observed for many of the precipitins and these substances are called *precipitoids.*

According to Ehrlich's conception, they are the precipitins which have lost the zymophore group, while retaining the haptophore group, of the complex molecule. Their development and action are illustrated in experiments with lactose serum by P. Müller, who found that heated lactose serum, while itself no longer precipitating the albumins of milk, prevents the action of rennet and fresh lactose serum ,but if the coagulins are first removed heating does not cause the serum to develop the powers of an anti-coagulin.

CHANGES IN THE PRECIPITABLE SUBSTANCE AND THEIR EFFECTS.

The precipitable substance may be exposed to a great variety of influences, natural and artificial, without losing its susceptibility to the precipitin, which, however, is lost when the albuminous molecule is dissociated or loses its receptor for the precipitin.

Effects of Heat.—Tschistovitch secured less precipitum in eel serum if heated to 58° C., and none after 80° C. Leclainche and Vallée found that heating albuminous urine two hours at 58° C., diminished its response to antiserum more than similar treatment of the antiserum itself. This somewhat anomalous result may perhaps be referred to the disturbing action of urea (cf. Pick). Nuttall concluded that blood precipitin and the precipitable substance are about equally resistent to heat, as dried serum heated one-half hour at 100° C. still reacted, while serum diluted 1 in 100 was unaffected at 55° C., but failed to react after heating to 100° C. Eisenberg was unable to destroy the reaction of dried bacterial precipitins or precipitable substance until the temperature reached 130 to 135° C., for one-half hour. Ferrai reports partial or complete loss of reaction from blood stains heated to 130° C. for one hour, 140° for twenty minutes, 150° for ten minutes, and 160° for five minutes. Biondi places the limit of resistance to heating of dried blood at above 130° C., finding some specimens to react after exposure to this temperature. Okamoto obtained distinct coagula from blood stains heated one-half hour at 50° and 100° C., but negative results with stains heated one hour to 150° C. Obermayer and Pick[2] find that beef serum heated to 60° or 70° C. not only fails to react to its antiserum, but also inhibits the action of pre-

cipitin upon fresh serum when added to that serum in certain proportions. Corin finds the precipitin reaction favored between temperatures of 37° and 50° C.

Drying seems to preserve indefinitely the special properties of the precipitable albumins of blood, but not without some deterioration. Thus Ziemke secured a definite reaction from an extract of the stomach of a ten-year-old mummified cadaver, from dry stains two, nine, fifteen and twenty-five years old, from five-year-old stains on rusty knives, from an eight-year-old washed stain, and from blood one and three years in earth. Yet most of the old stains did not react strongly, yielding only turbidity without flocculent precipitate, and one ten years old, on a shirt, failed to react at all.

Uhlenhuth obtained a reaction (turbidity) in one minute with blood stains six to twelve years old, and Biondi secured definite reactions with stains one to fifteen years old, but failed with one twenty years old. Graham-Smith and Sanger obtained slight or marked turbidities in five to sixty minutes with nearly all of 29 stains three to thirty years old, from the Scotland Yard Museum, 17 of which came from knives which had been smeared with oil to prevent rusting. These authors found that fluid sera and egg albumin nine and fourteen months old had lost respectively 7 per cent. and 12 per cent. in precipitum, while one specimen of egg albumin nine months old had lost 33 per cent. Okamoto, 1903, obtained very feeble reactions from dried blood on wood and limestone dating from 1867, and 1874, but abundant precipitate from a dry blood clot preserved from a venesection in 1874. Some observers report reactions from decomposing blood, and from mixtures of several bloods. Uhlenhuth passed through the Berkefeld filter extracts in normal salt solution of several specimens of alkaline decomposing blood, from man and animals, and obtained reactions, prompt turbidity, only with corresponding antisera. Soapy washings of blood stains, urine, blood frozen two weeks, and carbonic oxide blood, all gave the same result. Ziemke secured reactions from recently decomposed blood and from a three-year-old decomposed cadaver. Graham-Smith and Sanger grew various putrefactive organisms thirty-six to fifty days in pleuritic exudate, beef serum, and horse serum, and found usually a decrease of precipitum from 20 to 50 per cent., but with some putrefactive species (unnamed), and in all the specimens of horse serum the precipitum was increased, once as much as 24 per cent. All were slightly alkaline or neutral in reaction, and control tests were negative. From Okamoto's experiments it must be concluded that the presence of ammonia in old or decomposing blood may prevent precipitation.

Effects of Acids on the Precipitable Substance.—As the precipitum is soluble in rather weak acids and alkalis any great variation from a neutral reaction of the tested solution must be avoided. According to Linossier and Lemoine and Rostocki a slight acid reaction favors precipitation, while alkalinity hinders it. These observations accord with Pick's conclusion that the precipitum most resembles an alkali-albumin. Michaelis finds that human blood precipitum is soluble in dilute acids and alkalis and reprecipitated by neutralization. Graham-Smith and Sanger tested the action in .6-per-cent. salt solution of various acids, sulphuric, nitric, hydrochloric, acetic, oxalic, tartaric, carbolic, pitric, citric, salicylic and chinosol. All of these in dilutions up to and including 1 in 10,000, caused turbidities on addition of test serum, except carbolic and salicylic, which were without effect in dilutions of 1 in 1,000 and above. Some inorganic acids, however, caused very little clouding at 1 in 100, although more active both above and below this dilution. Strong alkalis were less uniform in action, caustic potash and soda caused turbidities in 1 to 1,000 dilution, while sodium carbonate and ammonia were inert at 1 in 10 and above, and were therefore available for neutralization of acid fluids. They found that small quantities of acid or alkali, especially of acid, diminished the quantity of precipitum. They concluded that it is necessary to test the reaction to litmus of all solutions of doubtful source and to neutralize if they are found decidedly acid or alkaline. In testing old blood stains from leather they found the solutions acid, except those from chamois leather, which were alkaline. Neutralization by sodium carbonate was therefore necessary before adding the serum. A thick, polished yellow leather gave a highly acid reaction, and no method of neutralization could be found which permitted the successful use of the test. The destruction of the precipitable substance was referable apparently to the tannin which in dilution of 1 in 1,000 clouds serum heavily. One of us was unable to obtain a specific reaction from human blood which had dried two months on shoes of a moderately cheap quality of red leather. All of the solutions of the stains in .6 per cent. salt gradually yielded spontaneously an abundant albuminous precipitate without the addition of any serum, and the decanted clear fluid continued to precipitate various sera subsequently added—probably from the presence of tannin. All the solutions were neutral to litmus. Okamoto also reports spontaneous precipitates from solutions of blood stains on leather. Since ammonia and phosphoric acid dissolve the precipitin (Uhlenhuth), the presence of these agents may prevent the reaction.

Action of Salts on the Precipitable Substance.—In order to avoid spontaneous precipitation of albumins a certain proportion of salt must be present in the solvent, since solutions of blood in distilled water slowly become cloudy and deposit a sediment in twenty-four hours. Normal salt solution, .6 to .9 per cent., has proven the best solvent from which spontaneous precipitates rarely occur in twenty-four hours. Linoissier and Lemoine using 1 in 20 solution of blood report that 1 per cent. of salt gives precipitation, while

5 per cent. completely arrests it. On the contrary, Eisenberg and Rostocki find no difference in the quantity of precipitum when the proportion of salt reached 10 to 18 per cent. Graham-Smith and Sanger tested human blood solutions with increasing quantities of salt from .6 per cent. to saturation. At 1 per cent. the precipitum was slightly diminished (12 per cent.), at 2 per cent. of salt content almost the full amount was obtained: at 3 per cent. there was again a diminution, after which the precipitum increased until with saturation the precipitum reached 133.8 per cent. Very different results, however, were obtained with sheep serum. Beyond the fact that normal salt solution is the best diluent, present data do not, therefore, permit us to state rules regarding the influence of salt on the precipitin reaction. The same authors found turbidities to arise on the addition to tested fluids, of sodium and potassium tartrate 10 per cent., sodium acetate one per cent., potassium cyanide one per cent., borax one per cent., while sodium citrate, magnesium sulphate, and potassium nitrate and chlorate, were inert.

Action of Earth on Blood.—Several observers have secured positive reactions from blood mixed with earth, and the effects of such mixtures have been studied in detail by Graham-Smith and Sanger. They mixed equal quantities of human serum with detritus of chalk, red brick, Pasteur filter, Berkefeld filter, ordinary earth, white brick, mortar, and lime, one specimen of each being kept dry, and one wet, for four days, with the result that there was in all well marked diminution in the quantity of precipitum, average 20 to 30 per cent., while mortar and lime completely destroyed the precipitin substance. They found that the lime in ordinary earth precipitates test serum and must be removed by a current of CO_2 which does not interfere with the precipitin reaction, but that the lime of ordinary earth does not seriously affect the precipitable substance of blood mixed with it.

In this connection the writers may record a complete failure of many attempts to secure a reaction from human blood mixed for three months in earth containing much decomposing vegetable matter. Ziemke's results with certain specimens of blood mixed with earth, one to three years, must also be regarded as negative. Okamoto found that solutions of blood from sand and mortar sometimes gave spontaneous precipitates.

Effect of Antiseptics.—Carbolic acid or chloroform are commonly employed to inhibit bacterial growth in antisera and in tested fluids requiring observation longer than three hours. Yet each of these agents in concentrated form precipitates albumins from serum and gives turbidity if present in proportion of one per cent. or more. Under one per cent. they are inert. Graham-Smith and Sanger tested the action of several antiseptics. Mercuric bichloride and silver nitrate clouded serum at 1 in 10,000 dilution; copper sulphate at 1 in 100,000, formalin, thymol, benzol, toluol, xylol, and ether, at 1 in 100. Lysol and lysoform in high dilutions also produced turbidity.

Results Obtained from Blood Stains on Miscellaneous Materials.—The writers obtained an abundant spurious reaction from blood stains on wall-paper. Controls made from unstained portions of the wall-paper gave abundant precipitates with different antisera, showing that the precipitation resulted from the action of some chemical in the paper. The solutions were neutral. Graham-Smith and Sanger report pronounced spurious reactions from ten samples of wall-paper.

They obtained good reactions from one thick blood stain on oak, but the test failed with minute stains on cedar and pine. Most observers have encountered no difficulty with stains on wood. One of us was unable to obtain satisfactory results from human blood stains on starched cuffs owing apparently to the presence of dissolved starch in the solution, which gave marked turbidity with various antisera.

Spontaneous Precipitates.—A short experience in the medicolegal use of precipitin sera will seldom fail to include the occurrence of spontaneous turbidities, and precipitates, in solutions prepared for testing. These are usually referable to the presence in the solution of chemicals contained in the material on which the blood is found. Okamoto observed such precipitates in solutions of blood stains on leather, sand and mortar. The writers have observed them in solutions of blood stains on shoe leather and shoe strings, and in one case in which vegetable albumins were dissolved from a rusty knife.

Specificity of Precipitin Reactions.

The first observations of workers dealing with sera of moderate potency and mixing the sera in indefinite proportions rather uniformly indicated that the reactions of precipitins were almost if not quite specific. Yet from the first a certain degree of similarity in the reactions of blood of closely related animals was observed. Bordet found his chicken precipitin to affect also pigeon blood, and Myers' chicken-egg precipitin was active with duck's egg, and his sheep globulin serum affected egg-albumin and ox-globulin. Uhlenhuth's potent hen's egg-albumin serum while active with pigeon egg-albumin, was entirely inert on other varieties of commercial albumins. Leclainche and Vallée found their serum obtained with albuminous urine precipitated human pleuritic exudate but not human blood serum or serum from the horse, donkey, sheep or beef.

Wassermann and Schutze declared in favor of the medicolegal value of the test, on finding that their humanized rabbit serum failed to appreciably affect any one of 23 different animal bloods, except that of the baboon, which reacted more slowly and incompletely than human blood. Stern also found that a humanized serum negative to horse, ox, sheep, and pig bloods, gave a feeble reaction with the blood of three species of

monkey. It soon became apparent that the more potent the serum the more pronounced, under the usual conditions is its effect on alien bloods. Chirokikh and Niedrigailow, using active humanized sera obtained precipitates, in the course of four to five hours, in all of several animal bloods tested.

Nolf's dog blood precipitin, Uhlenhuth's beef and humanized sera, and Wassermann's and Stern's humanized sera, were all reported to be specific for the blood used in the injections, but the exact dilutions were imperfectly stated. Uhlenhuth, not attempting to calibrate the serum, was unable to distinguish from each other the blood of the chicken, goose, duck, guinea-hen and pigeon.

Strube was among the first to point out the activity of humanized sera on other than human blood, finding that a powerful serum precipitating human blood in a dilution of 1 in 5,000 gave a precipitate also in monkey, guinea-pig, chicken, swine, calf, dog, pigeon, and sheep bloods. He speaks of instant turbidity occurring on the addition of this serum to chicken blood in proportion of 1 in 50. This is a very unusual experience. Using a more powerful humanized serum active in dilution of 1 in 20,000 (?) he found no reaction in a series of other animal bloods when the serum was diluted at least 1 in 100 and almost no trace at 1 in 10. He found that human blood was more actively precipitated by horse and beef antisera than by hog antiserum. He fails to state the exact details of these tests but the results were sufficient to point out the necessity of controlling the dilution of the test serum, and of determining by actual experiment what individual peculiarities each serum may exhibit.

Nuttall in an extensive study not yet completed has shown that the reactions with potent sera extend over closely related classes in the animal kingdom. Testing several antisera on the blood of over 500 animals of various classes he finds that a mammalian antiserum affects in varying degree the blood of nearly all mammals, but not without striking exceptions. Such sera however fail entirely to affect the blood of birds or reptiles. A reptilian or avian antiserum, while active in many birds and reptiles, fails to touch mammalian blood. Dealing with mammals he found that humanized antiserum was almost as active on the blood of the high monkeys, *Simiidæ*, as on human blood, less active with the *Cercopithecidæ*, very slightly with the *Hapalidæ* and *Cebidæ*.

Similar results were secured with Grünbaum's antichimpanzee serum. Antihorse serum precipitated the blood of eight species of *Canidæ*, but was entirely inert with 499 other bloods. Antibeef serum affected the blood of most ruminants. Antipig serum proved unusually diffuse in its effects, clouding the blood of man, monkey, marsupial, bat, and porpoise. Antifowl serum acted more or less on all avian bloods tested, but not on 357 other bloods. A powerful anti-egg serum affected slightly the blood of the alligator. Several reptilian antisera proved highly specific in their subclasses, that of the alligator affecting only the alligator and turtle, out of 500 bloods. Lobster antiserum precipitated lobster and crab blood only, from 503 bloods tested, and frog antiserum had no effect on 508 non-batrachian bloods.

It is important to note in reference to Nuttall's reports that "none of the reactions in heterologous bloods would ever be mistaken for a full reaction such as homologous blood gives." This statement does not apply to the reactions of humanized serum on the blood of higher monkeys.

The attempt to define a specific reaction must consider several factors entering into the reaction: (*a*) The potency of the serum; (*b*) the dilution of the serum; (*c*) the time elapsing; (*d*) the concentration of albumins in the tested fluid.

It has been shown that the more powerful the serum the wider is the scope of its action on the blood of related animals. Thus a feeble humanized rabbit serum in dilution of 1 to 5 may have no effect whatever on any but human and monkey bloods, while a very active humanized rabbit serum in the same dilution may precipitate the blood of several domestic animals. It might, at first sight, appear better, and has been formally recommended by Wasserman, to avoid the use of very potent sera in medicolegal work. On the contrary it has been fully demonstrated by Kister and Wolff, and in the experience of the writers, that the more powerful sera, permitting of rather high dilution, give much more reliable results than can be obtained by weaker sera less diluted. Overimmunized animals whose sera are relatively more potent with heterologous than with homologous blood are theoretically possible, but have not yet been observed.

If one compares the action of a weak serum precipitating human blood only in dilution of 1 in 15 and heterologous bloods in dilution of 1 in 1, with that of a powerful serum potent against human blood in dilution 1 in 200 but increased in activity on heterologous blood only up to 1 in 10, it will be seen that with the more potent serum the limits between dilutions precipitating human and heterologous bloods are very much greater than with the weaker serum, *i.e.*, as 190 is to 15. Hence the powerful serum may be safely diluted far beyond the point when it can affect heterologous bloods.

Moreover, it is only the more powerful sera which can be relied upon to cause precipitates with the minute quantities of blood frequently encountered in medicolegal work.

Nuttall has studied extensively the grades of reaction of various antisera on related animals and suggested a method of measuring the degree of reaction. This method involves the calibration of the test serum and tested blood and the estimation of the bulk of the precipitate formed after forty-eight to seventy-two hours, beyond which time the precipitin does not vary.

The detailed results thus obtained have not yet appeared, but Smith and Sanger describe the method as follows: By means of an accurately graduated pipette .5 c.c. of a 1 in 21 dilution of

serum in .6 per cent. salt solution is placed in a small clean dry test-tube, and .1 c.c. of antiserum added.

After thoroughly mixing, the specimen stands twenty-four hours when the precipitum settles. The supernatant fluid is pipetted off and the precipitum drawn into a capillary tube which is sealed and allowed to stand for seventy-two hours.

The bulk of the precipitum is then read from the tube which is graduated in cubic centimeters. The average quantities of precipitum obtained by adding their antisera to human and beef blood in the above preparations were .0293 c.c. for the human blood and .0233 c.c. for the beef blood. This method is not claimed to escape errors of less than 10 per cent., arising mainly from variations in the quality of the precipitum. It is specially adapted to experimental studies and measuring of blood relations among animal species but does not appear fortunately adapted for medicolegal work.

Kister and Wolff have very clearly shown that by proper dilution of the test-serum, reactions in heterologous blood may be avoided. Working with horse precipitin from the rabbit, they found that when the test serum was added in proportion of 1 in 5 to solutions of serum diluted 1 in 10 or up to 1 in 320, instant turbidity appeared in sheep, human, beef, and swine blood, as well as in horse blood. When the test serum was diluted 1 in 50, although turbidities formed in one of the above heterologous bloods, no flocculi appeared in two hours, except in horse blood, which gave a flocculent precipitate in thirty minutes. With dilutions of test serum 1 in 100 the heterologous bloods failed to react except by very faint turbidity, while in horse blood the reaction was but slightly diminished. Sheep precipitin from the rabbit failed to effect human blood in any dilution. Throughout their experiments the most distinct turbidities usually appeared in the more concentrated solutions of blood but usually the turbidities became flocculent first in the weaker solutions of blood.

The writers have tested various antisera with a view to determine under what conditions the reactions in heterologous bloods may be avoided, and without danger of error from the personal equation in judging the reaction. The action was first tested of normal rabbit serum, added in proportion of 1 in 1 to fresh serum of man, beef, sheep, goat, horse, rabbit, dog, cat, and chicken, diluted 1 in 10, 1 in 50, and 1 in 100. Faint turbidities were sometimes produced, but none of these were pronounced and none became flocculent

TABLE I.

ACTION OF HUMANIZED RABBIT SERUM.

Human						Beef					Sheep					Goat					Horse					Dog					Cat				
Blood dilution	10	50	100	200	500	10	50	100	200	500	10	50	100	200	500	10	50	100	200	500	10	50	100	200	500	10	50	100	200	500	10	50	100	200	500
Time — Serum 1-5																																		
10 minutes	T	T	T	T	T	T	T	T	T	0	T	T	0	0	0	T	T	T	0	0	0	0	0	0	0	0				0				
30 minutes	T	T	T	T	T	T	T	T	T	0	T	T	T	0	0	T	T	T	T	0	T	0	0	0	0	0				0				
60 minutes	F	F	T	T	T	T	T	T	T	0	T	T	T	0	0	T	T	T	T	0	T	T	0	0	0	0				0				
2 hours	F	F	F	T	T	T	T	T	T	0	T	T	T	0	0	T	T	T	T	0	T	T	0	0	0	0				0				
3 hours	F	F	F	F	F	F	T	T	T	0	T	T	T	0	0	T	T	T	T	0	T	T	0	0	0	0				0				
Time — Serum 1-10																																		
10 minutes	T	T	T	T	T	T	T	T	T	0	T	T	0	0	0	T	T	T	0	0	0	0	0	0	0	0				0				
30 minutes	T	T	T	T	T	T	T	T	T	0	T	T	T	0	0	T	T	T	0	0	0	0	0	0	0	0				0				
60 minutes	F	F	T	T	T	T	T	T	T	0	T	T	T	0	0	T	T	T	0	0	T	0	0	0	0	0				0				
2 hours	F	F	F	T	T	T	T	T	T	0	T	T	T	0	0	T	T	T	0	0	T	T	0	0	0	0				0				
3 hours	F	F	F	F	T	T	T	T	T	0	T	T	T	0	0	T	T	T	0	0	T	T	T	0	0	0				0				
Time — Serum 1-20																																		
10 minutes	T	T	T	T	T	T	T	0	0	0	0	T	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0				
30 minutes	T	F	F	T	T	T	T	T	0	0	0	T	T	0	0	0	0	0	0	0	0	0	0	0	0	0				0				
60 minutes	F	F	F	T	T	T	T	T	0	0	T	T	T	0	0	T	T	T	0	0	T	0	0	0	0	0				0				
2 hours	F	F	F	T	T	T	T	T	0	0	T	T	T	0	0	T	T	T	0	0	T	T	T	0	0	0				0				
3 hours	F	F	F	F	T	T	T	T	0	0	T	T	T	0	0	T	T	T	0	0	T	T	T	0	0	0				0				
Time — Serum 1-30																																		
10 minutes	T	T	T	T	T	T	T	0	0	0	0	0	T	0	0	0	0	0	0	0	0														
30 minutes	T	T	T	T	T	T	T	0	0	0	0	T	T	0	0	0	0	0	0	0	0														
60 minutes	F	F	T	T	T	T	T	0	0	0	0	T	T	0	0	0	T	T	0	0	0														
2 hours	F	F	F	T	T	T	T	0	0	0	T	T	T	0	1	0	T	T	0	0	0														
3 hours	F	F	F	F	T	T	T	0	0	0	0	T	T	0	0	0	T	T	0	0	0														
Time — Serum 1-50																																		
10 minutes	T	T	T	0	0	0	0	0	0	0	0	0	0	0	0	0																				
30 minutes	T	T	T	T	T	0	0	0	0	0	0					0																				
60 minutes	T	T	T	T	T	0	0	0	0	0	0					0																				
2 hours	T	F	T	T	T	0	0	0	0	0	0					0																				
3 hours	F	F	F	T	T	0	0	0	0	0	0					0																				

T, turbidity; F, flocculi.

until bacteria developed. Four humanized rabbit sera were then tested on the same bloods diluted from 1 in 10 to 1 in 500. The most active of these sera caused a flocculent precipitate in two hours, in human blood diluted 1 in 100 when added in the proportion of 1 in 200. The others were slightly less active. The results with these four sera varied considerably, some proving more specific than others. When diluted less than 1 in 30 all of the sera occasionally produced turbidities in heterologous bloods. These turbidities were usually slight and none of them obtained by dilution of test-serum 1 in 30 became flocculent in three hours, while all of them caused flocculent precipitates in three hours in human blood without regard to the dilution of this blood, when added in dilution 1 in 30 or even 1 in 100. It thus appeared that in order to obtain a specific reaction for human blood free from danger of error from the personal equation, one had to dilute these antisera at least 1 in 30, and require a distinct flocculent precipitate within three hours at 37° C. (See Table I.)

(To be Continued.)

A STUDY OF IMMUNITY. EHRLICH'S SIDE-CHAIN THEORY.*

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Modern pathology has taught us that in the consideration of disease we are not dealing with diseased organs, but rather with diseased cells; and as the cell is the center of the pathological condition, so is it the center of the bodily defenses, and we might say that as a chain is no stronger than the individual links which compose it, so is an organism no stronger than its individual cells.

Health is that condition in which the various body cells are acting and reacting in such a manner that the various structures and organs are able to perform the work which nature has assigned to them. Not only are these cells endowed with the power to do work, but they also possess the power of defending the organism against harm from foreign influences.

Suppose the organism is attacked by a species of foreign cell such as the causative element of smallpox, the body cells begin at once to oppose its ingress, and in many instances are able to bring the disease to a standstill. In such cases we say the patient recovers. Not only does he recover, but he carries with him a peculiar condition which protects him from another attack of the same disease. This has been termed immunity. In its wider sense, immunity means a protection of the organism from any toxic substance.

Immunity has been recognized for ages, but its complete explanation is still to be found. Not only has it been noted that those who recover from certain diseases possess immunity, but also that certain persons who never had them seem likewise to be immune. Certain individuals will pass through an epidemic and remain well when all of their associates become ill. Certain species of animals will remain well while other species are dying of some infectious disease. An example of this is found in the ordinary field mouse, which is insusceptible to septicemia, while the house mouse is very susceptible. So we have two kinds of immunity, natural and acquired; natural depending upon an innate property of the cells of the organism which protects it from disease and acquired, depending upon a certain condition artificially produced.

Now let us inquire, What is it that causes immunity? What is it that takes place when an individual who was formerly susceptible to a given disease suddenly manifests a resistance toward it? What is it that makes one animal or species of animal susceptible to a given disease when another is insusceptible?

These are questions that have puzzled scientists for ages, and they have called out many answers to account for them. Metschnikoff has attributed to the phagocytes the power of defending the organism against disease; Buchner, to the germicidal properties of the blood aside from its cellular elements; others have thought it due to the using up of a necessary pabulum. When, in 1890, it was shown by Behring that immunity to a given disease could be artificially produced by the introduction into an animal of a serum taken from another animal which had been previously subjected to increasing doses of the cultures of the germ causing the disease, all previous notions of immunity had to be changed, and the first hint as to its true nature was obtained—it must be something associated with the action of the germ or its toxin upon the living host.

While working to standardize diphtheria antitoxin Ehrlich made several important observations which finally led to the enunciation of his side-chain theory. Among other important observations he noticed that toxin and antitoxin combine in definite proportions, that this combination is hastened by heat and retarded by cold, and that it takes place more quickly in a concentrated than in a weak solution. These very suggestive facts showed this action between toxin and antitoxin to be very much like other chemical reactions; and, by further study and experiment, Ehrlich was able to formulate his theory, which up to the present time accounts more satisfactorily than any other for the phenomena of immunity.

The production of immunizing substances depends upon the established fact that the body when in a state of health will produce substances which are antagonistic to alien cells and cell products. The manner in which this is done has been explained in a very plausible manner by Ehrlich.

He conceives of the body cells as consisting of a central nucleus and a number of side-chains or receptors. These side-chains possess certain affinities which are satisfied by or correspond to certain side-chains of cells, which are introduced from without the organism. These side-chains

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have to do normally with the nutrition of the organism, the food material being taken up by its combination with the side-chains of the cell. When a poisonous effect is produced upon the organism, it likewise must be produced by a combination being formed between it and some of these side-chains. It is not conceivable that nature has endowed the cells of the organism with special side-chains for poisonous materials, but rather that these poisons are capable of forming unions with some of those which are normally intended to seize upon nourishing particles.

There is a physiological law according to which protoplasm when injured tends to restore itself, and in the matter of cells, not only compensation but hypercompensation is the rule. Now, when a poison has fastened itself upon a cell through its side-chains, what happens depends upon the degree of toxicity. If the action of the poison is severe, death of the cell and perhaps the organism is the result; if slight, the cell is only slightly injured and tends at once to reproduce the injured side-chains. Not only enough are produced to replace the injured ones, but a greater superabundance of them is likely to be produced, which are cast off into the blood and lymph stream. These side-chains floating in the blood stream retain their affinity for the poison which caused them to be formed as though they were still fastened to the cell, hence they combine with the poison and prevent it from combining with the side-chains which are still fastened to and a part of the cell. These are the antitoxin. As has been so tersely put by Behring: "The same substance which, when incorporated in the cells of the living body, is the prerequisite and condition for an intoxication and becomes the means of cure when it exists in the circulating blood."

According to this view the cells of an animal possessed of natural immunity to a given poison possess no side-chains with which the side-chains of the poisonous molecule can combine; thus the cells of the field mouse, as mentioned above, have no side-chains which possess an affinity for the side-chains of the poisonous molecule present in septicemia, and if an antitoxic serum were discovered for septicemia it could not be made from the field mouse.

Aside from the natural and acquired immunity we also have active and passive immunity. These may both be illustrated in the production and use of diphtheria antitoxin. Active immunity is that which is produced by subjecting an organism to doses of cultures of the bacillus in which the organism produces its own antitoxin. Passive immunity, on the other hand, is that which is produced by introducing into the organism an antitoxin already formed. Thus when a horse is subjected to increasing doses of diphtheria cultures, the receptors or side-chains of the cells are injured, and in Nature's efforts to restore them she forms many more than are necessary, which are cast off into the blood and lymph stream as antitoxin. This is active immunity. Now, when this serum is taken from the horse and injected into the human being it carries with it the receptors or side-chains of the horse and so passively immunizes its recipient.

When the anti-toxin for diphtheria and tetanus were discovered it was thought that the final solution to the prevention and cure of all infectious disease was at hand; but later studies showed this to be not the final solution but only the first hint. It was found that the different micro-organisms of disease produce their deleterious effects in different ways. While in diphtheria and tetanus the toxic substance is soluble and the main cause of the poisonous symptoms in other diseases, such as tuberculosis and leprosy, this is not the case, and the action seems to be largely mechanical. Also in septicemia the cause of the symptoms is not the toxin so much as the germs themselves. This dissimilarity in the causative factors of infectious diseases overthrew the hope of reducing the cure of infectious diseases to the finding of anti-toxins.

At this juncture, when hopes seemed low as regards the discovering of any great number of antitoxins, a very important discovery was made by R. Pfeiffer. He noticed that if cholera bacteria are placed in the peritoneal cavity of an animal which has been previously immunized to cholera, the bacterial cells are dissolved by the peritoneal fluid. Further investigation showed this action to be specific, and that those bacteria only are dissolved to whose action the animal has been immunized. This has been denominated Pfeiffer's phenomenon and the action is known as bacteriolysis.

It was shown that immunity was not only produced by antitoxins but also by bacteriolysis. In searching for the explanation of this phenomenon it was found that it could be explained by Ehrlich's side-chain theory, although the process was much more complex than that of immunity by antitoxin.

Pfeiffer's phenomenon does not only take place when bacteria are introduced, but when any foreign cell is introduced. It seems possible to immunize the body against all cells. Thus blood, spermatozoa, the cells of the various organs have been able to produce, when introduced into the organism, a specific immunizing serum whose lytic action is limited to the definite cell which caused it to be formed. The blood of a goat inoculated into a horse will produce in the horse a serum which will dissolve the corpulscles of a goat; by the gradual inoculation of an animal with spermatozoa a serum has been produced which will kill spermatozoa; and by the inoculation with cells from the liver and kidney sera have been produced which have a tendency to cause degenerative action in these organs. So it seems that there is no end to this matter of cytolysis, as this process is called. It has been suggested that it might be possible to cause the destruction of tumors by forming a specific serum which would cause their disintegration. It may seem Utopian, but it is not beyond reason to hope that there will soon be made in the biological laboratory a specific serum for each of the infectious diseases.

To produce lysis it has been found that two bodies are necessary in the serum. One of these is destroyed by a heat of 56° and the other is not affected thereby. The substance which is destroyed by a heat of 56° is found in normal serum and has been named differently by different authors, thus: addiment, alexine, complement and cytase. The other substance which is produced at the time of immunization has been given so many names by different investigators that it is necessary for one to know them all or he will be misled. Thus, immune body, intermediary body, amboceptor, fixitive, sensitizer, preparative and desmon have all been invented to describe this one body.

Sera, whose action depend upon bacteriolysis, deteriorate with age owing to the complement being unstable. This can be again supplied and the serum reactivated by the addition of fresh serum, even though it be taken from a non-immunized animal. This deterioration of the complement may account for disappointment at times in the use of sera in treatment of disease.

In the production of immunity we have not only the formation of antitoxins and bacteriolysins, but also other products which seem to be directed against other properties of the invader than those opposed by these. Such are the agglutinins, precipitins and coagulins, the study of which would lead me farther than I wish to go at this time.

I recognize the difficulty in presenting this subject in a simple manner, for it deals with new ideas which are described in a strange terminology: but let the importance of the subject be my apology. It is necessary for every clinician to be conversant with the new theories of immunity, for it is to the laboratory that we must look for our treatment of specific infectious diseases in the future. Already we have diphtheria antitoxin, which has reduced the mortality of this disease by about 25 per cent. Tetanus antitoxin has been of value in some cases. Antistreptococcic serum has been a delight to some and a disappointment to others. The immunizing against plague seems to be established. Serum treatment of pneumonia and typhoid fever offer hope. The treatment of tuberculosis by the various immunizing preparations which have been made from the bacillus is fast gaining ground and eminently successful in the hands of careful men. It is not sufficient to name these sera and say that because there have been more failures than successes that they are of no value. Far from it. They are precursors of something better. Their partial failures will bring success, and out of this chaos of blighted hopes will come order.

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REPORT OF A CASE OF ACUTE GLAUCOMA INCITED BY THE USE OF EUPHTHALMINE FOR DIAGNOSTIC PURPOSES.*

BY HENRY W. RING, A.M., M.D.,
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Euphthalmine hydrochlorate, a synthetic product said to resemble closely eucaine "B," was brought to the attention of ophthalmologists by B. Treutler in 1897. He found it to be a strong mydriatic, brief in its action, and producing no unpleasant effects.

The invention of a mydriatic having a rapid and brief action without in any way affecting the power of accommodation is still a desideratum to be realized but it was thought euphthalmine might be the drug *par excellence* for this purpose and extensive and varied experimentation resulted.

Treutler's own experimental results were summarized as follows, viz.:

1. The instillation of euphthalmine solutions into the eye causes only very slight and temporary inconvenience.

2. Euphthalmine is a powerful mydriatic. A 5- to 10-per-cent. solution produces a maximum dilatation of the pupil in about the same time as does 1-per-cent. homatropine solution.

3. Its action is less intense and prompt in the aged than it is in younger individuals.

4. Euphthalmine has the advantages over cocaine as a mydriatic that it is more powerful in its action, and that it does not damage the corneal epithelium. On the other hand, the mydriasis that it occasions is somewhat slower of development.

5. Euphthalmine affects accommodation less than does homatropine.

6. Both the mydriasis and the accommodation paralysis disappear much more quickly after its use than after that of homatropine.

7. No unpleasant effects upon the organism have so far been observed from its use.

His observations were confirmed in the main by Ball, Schneider, Vossius, Winselmann, Vinci, Woskessensky and Darier during 1898 and since that time I presume there are few ophthalmologists who have not used the drug enough to form their own conclusions as to its limitations and value.

Knapp, in 1899, after nine months' use, was very favorably impressed with it as an aid in ophthalmoscopical examinations.

In two cases he received the impression that "euphthalmine, like atropine, had a tendency to increase the eyeball tension. In many later cases had not seen this effect any more."

In the same year Jackson wrote "the claim that euphthalmine is free from danger of causing glaucoma, should be met with skepticism. The claim has been put forward for duboisine, and homatropine, and has for them proven false. No one has yet reported a glaucomatous attack fol-

*Read at the Annual Meeting of the American Ophthalmological Society, Washington, D. C., May 13, 1903.

lowing the use of euphthalmine; but the report will undoubtedly come later, if the drug is widely used. It has this advantage over the stronger mydriatics, that the brief mydriasis that it produces may not so often last long enough to develop increased ocular tension. But its mode of action seems quite similar to that of atropine and homatropine; and it is possible that the relatively greater mydriasis it produces, as compared with the cycloplegia, may be fraught with correspondingly greater danger. At any rate, without wide and prolonged experience with it, we are not justified in ranking euphthalmine with cocaine as a comparatively safe mydriatic to use in cases of impending glaucoma."

In the *Ophthalmic Record* for May, 1902, Dr. Myles Standish reports a compilation of 32 cases of glaucoma reported to the New England Ophthalmological Society since its foundation. In an analysis of these reports he found that glaucoma was precipitated in nine cases by atropine, two cases by homatropine, and one case by cocaine, one case by scopolamine, and one case by duboisine—an array, which to his mind, tends to establish the fact that it is the mydriasis itself, and not the drug used, which produces the disastrous result.

Of these 14 cases 12 were caused by the use of mydriatics alone and he is of the opinion that, "in a person over forty years of age, when the pupil is dilated for the purpose of examining the fundus or refraction, the instillation of a myotic before the patient leaves the office, as a matter of routine, would, in all probability, prevent the supervention of acute glaucoma in cases predisposed thereto."

Previous to the introduction of euphthalmine it was my habit to use cocaine to dilate the pupil for diagnostic purposes. My patients did not like the sensation of stiffness of the eyeball and lids caused by its use but this was of minor consequence. A not at all infrequent cause of complaint, however, was a more or less serious interference with the accommodation, and where the accommodation was practically abolished by age, with the general near vision. The time of the visual disturbance ranged from six to twenty-four hours.

During the past three or four years I have entirely displaced cocaine by euphthalmine for simple dilatation of the pupil, using a 5-per-cent. solution, and I simply know that I have little or no complaint from patients as to any prolonged disturbance of vision.

I have never assumed that the drug was not capable of causing increased tension and possibly exciting a glaucomatous attack in an eye predisposed thereto and therefore have made it a custom before using it in a patient beyond middle life, to take the tension of the eyeball, examine the eye by oblique illumination and make some inquiries as to glaucomatous symptoms. I have never had occasion to regret its use but in one instance and the history of that case was as follows: Feb. 14, 1902, Mrs. H., residing in a near-by town was sent to me by her family physician. She was a well-to-do housewife, aged fifty-six years. At the age of eight years she was very ill with rheumatism followed by erysipelas and since then has never been in vigorous health. Attacks of articular rheumatism have been common but there is no marked enlargement of the joints. Headaches in the frontal and occipital region have been a source of affliction many years. In the autumn of 1901 she began to have periods of pain in the left eye and supra-orbital region and these attacks had been increasing in frequency and severity and when an acute stage was reached the vision of this eye was so much reduced that she avers her inability to distinguish objects. The eye would be mildly congested and she could get relief from hot applications and anodynes, after which the usual sight would be restored. Recently these attacks had become so frequent and severe that her physician wanted my opinion as to the condition of the eye. He had assumed up to this time that the eye pain was an exhibition of her general neuralgic and rheumatic condition.

I first took her refraction which was O. D. $\frac{20}{70}; \frac{20}{20} - +1.0 = +.5$ ax. O.; O. S. $\frac{20}{70}; \frac{20}{20} - +1.0 = +.5$ ax. O. She read J.1 with each eye with $+4.5 = -.5$ ax. V.

Macroscopically the eyes seemed normal and after finding the tension and field (taken roughly) the same, I instilled two drops of 5-per-cent. euphthalmine solution into the left eye, as the pupil was small and I felt the necessity of a thorough examination of the interior of the eye. In about a half hour the pupil was well dilated and the ophthalmoscope revealed no abnormal condition sufficient to account for her pain. The outlines of the nerve seemed a trifle hazy and there was a single spot of retinal exudation near the papilla at the nasal side.

I gave her correction for distance as she had not been wearing any, changed her reading glasses slightly, ordered phospho-nux and asked her to let me see her, if possible, while she was in the midst of another attack.

I did not see her until fourteen days later and the history of the case during that time was furnished by the patient. Within a few hours after she left my office there was a renewal of the pain in the eye and the left side of the head and during the next two weeks she had but few intervals of relief except when under the influence of opiates.

The eye soon became inflamed and tender and the vision much impaired. She was so weak and prostrated that she did not feel able to come to my office until Feb. 28, when I found a typical case of acute glaucoma.

Vision reduced to distinguishing objects T + 1½, eyeball injected and tender, cornea dull and anesthetic, anterior chamber shallow, pupil dilated and fixed, no view of fundus possible. The right eye was not involved.

Within four hours I did an iridectomy, ether being used as an anesthetic. The iris was very rotten and I was obliged to pick it out in strands. After this operation she was comparatively free from pain for the first time since the instillation of euphthalmine.

I used eserine in the good eye the day of the operation and several succeeding days. March 5 the tension was normal, field of vision (not taken by the perimeter) very good, eye white and quiet and vision very fair, but I have no exact record of it. She went to her home and returned to me on March 15. There had been no recurrence of trouble and I found T.n. media clear, only slight cupping of disc V.L.E. $\frac{20}{50} + \frac{20}{20} - + 1.12 = -1.0$ ax. V. and reads J.2. with $+ 4.0 = -1.0$ ax. V.

During the next four months she would have occasional shooting pains through the left eye and the head but only such as she had been having for two years or more. She had rarely seen halos and the field in each eye was little if any impaired. She was disturbed about the possibility of the disease attacking the good eye and July 2 she elected to have an iridectomy on the right, which I did, using cocaine as an anesthetic.

She has had a very comfortable winter and her vision is normal with correcting lenses. The eyes are free from tension, cupping of the discs or pulsating veins.

CIRCULAR LACERATION OF THE CERVIX UTERI.*

BY HUGH CROUSE, M.D.,

OF VICTORIA, TEXAS.

THE parous cervix nearly always shows some signs of laceration. The degree varies from the mere indentation, to a deep tear, extending to or into the vaginal insertion; the type, from unilateral, bilateral or stellate, to a circular separation of the cervical tissue. In meeting the first of the two subsequent circular lacerations I am about to describe I was totally astonished when specular examination acquainted me with the condition present. The symptoms of cervical lacerations are mainly objective, but subjective indications may be present when a post-partum hemorrhage of an extent inducing collapse exists, despite a properly retracted uterus. The treatment varies, according to the degree, from a passive inattention, to the modern method of immediate repair. The friable condition of the uterine tissues immediately after delivery, I have found diffident to retain sutures sufficiently contracting in their efforts to obtain a fair apposition of the parts; but yet such an effort should be made. Literature upon the usual types, their nervous sequelæ and treatment is appalling in its quantity; upon the circular form the greatest paucity exists. In fact, to such an extent is literature barren upon circular laceration that I have hesitated to report the two cases noted. The thin-rimmed os of a slow labor offers to the rough or hasty accoucheur the best of chances for laceration, but, yet, the scar-marked cervix presenting its resisting cicatricial tissue to the presenting part, and natural expelling forces, gives its quota of laceration in the multipara. Case No. 2 is one resulting from, in my opinion, excessive scar tissue left in the closure of the wound made in a vaginal myomectomy, done at the fourth month. Case No. 1 resulted from the external force, backed by the proverbial ignorance of a colored midwife, who mistook a pendant cervix, after a twin delivery, in a thirty-six-year-old VI-para colored woman in whom but a single placenta existed, for a second afterbirth. Her chain of reasoning led her to believe that where two children were there needs must be a dual placenta. Strenuously she strove, digging and gouging, though plainly found (so the history given the attending physician and I, the counsel) no second placenta could be delivered. One of my colleagues had been called but failed to deliver. On being invited into the case a careful examination showed an empty uteri, except for clots. A peculiar ribbon of tissue was united, to the extent of half an inch at both ends, to the cervix (an incomplete band, as it were) presented itself. With proper light and instruments the parts were exposed and the condition readily shown to be a circular laceration of the cervix. Ten hours had intervened since delivery of the second child, and, as a result of the dragging, which the band had been subjected to, the parts between attached ends were black and devitalized. The band was removed by means of scissors, the edges sterilized and antiseptic douches ordered twice a day with good results.

Case II.—Mrs. F., white, aged thirty years; III-para; had a quick normal delivery, the three stages occupying four hours. A rather free hemorrhage after placental delivery, despite a well-contracted uterus, led to an investigation of the cervix. The posterior lip of the cervix was found to have a circular tear involving nearly half of the circumference, the breadth of separated tissue being about one-half inch. The part seemed well supplied with blood, hemorrhage lessening of its own accord rapidly, so a rather snug iodoform gauze packing was applied and the nurse warned to note carefully the flow. Twelve hours later the gauze was removed and 1 in 10,000 bichloride douche ordered twice a day with good results. In this case a vaginal myomectomy had been successfully performed at the fourth month. No doubt the cicatricial tissue had been caught through its excessive resistance to natural forces, and separation had been induced by some presenting part. The presentation was left occipito-anterior. These two cases have been presented on account of the rarity of circular laceration. They are instructive from their uniqueness alone.

* Read before the Obstetrical Section of the Texas State Medical Association, at San Antonio, Texas, April, 1903. Dr. J. F. Y. Paine, Professor of Gynecology in the University of Texas, Galveston, and Dr. Cantrell, of Greenville, Texas, reported similar cases in the Discussions.

MEDICAL PROGRESS.

MEDICINE.

Addison's Disease.—The patient, a young man of twenty-one years whose father was a pronounced drunkard, noticed one year before he was admitted to the hospital, slight discolorations around the knee-joints which in the course of some weeks also appeared on the face. At the same time he lost strength, and the pigmentation began to involve gradually various parts of the body. To the general weakness there supervened dizziness, at times faintness of such a pronounced character that patient was compelled to apply for admission to the hospital. In addition to this diarrhea, then constipation, lack of appetite, nausea, and at times troublesome palpitation. Patient left hospital in nine days somewhat improved, but was compelled to return in less than two months in a worse state than he left, while the pigmentation had by this time spread over a greater area of the body. The pigmentation gradually took on a bronze color and invaded the neck, the region of the scapulæ, especially over the bony prominences, the chest, the gluteal region and the perineum, as well as the sexual organs; then the extremities and the rest of the body, more or less. The striking feature of the affection was the patient's extreme debility, so that he was hardly able to move about. Lungs normal; examination of the heart elicits a distinct anemic murmur, otherwise normal; pulse small and soft, but not quite regular. Examination of blood gave about 4,000,000 red corpuscles, 15,000 white, 60 per cent. hemoglobin; no poikilocytosis of red corpuscles; number of white markedly increased, and among them many multinuclear neutrophiles, and an increase in the plates of Bizzozero. The temperature of the body was at times subnormal. After a two month's stay in the hospital patient was discharged very much improved, though with a loss of some 8 to 10 pounds in weight. N. N. Darkschevich (Roussky Vrach, No. 33, 1903) does not doubt that this was a case of Addison's disease, the more so as the patient's mother died of tuberculosis, and he himself suffered in his youth from a tuberculous joint disease. To determine the nature of the pigmentation, small pieces of the skin were excised, with the patient's consent, and their microscopical examination showed an accumulation of pigment in the lower stratum of the skin, mostly around the capillaries, while the epithelial cells are filled with some seed-like bodies which evidently contain the discoloration. In the treatment of the case adrenalin (the hydrochlorate) was administered twice and three times a day, in doses of 5 to 10 drops. The only marked benefit was evidenced by the increase in the secretion of urine; later on, however, the pulse also began to improve, and there was a noticeable diminution in the pigmentation, and improvement in the general condition. Unfortunately the patient insisted on leaving the hospital, and both the treatment and the observation of the case had to be discontinued.

Vegetarian Diet in Gout and Nephritis.—In a dietary intended for patients of this class, meat, especially of the red varieties, is excluded on account of the large amount of extractives which it contains. Vegetables are given, however, in large variety. J. W. Hall (Berl. klin. Woch., 1903, No. 38) has shown by chemical analysis that the purin contents of the ordinary vegetables varies within large limits. White bread, rice, tapioca, lettuce, cauliflower and potatoes come within the limits of safety, but peas, beans, oats, onions and asparagus are among those which should be avoided. Malt liquors also show a large percentage of purin bodies and should be forbidden.

Delicacy of the Tests for Iodine.—The demonstration of iodine in the urine and other body fluids is not only of value for the diagnosis of poisoning, but also for the diagnosis of the functional activity of the stomach as regards absorption and motility, and of the excretory power of the kidneys. A large number of tests have been devised for the purpose of demonstrating the presence of the drug and all of them have been made the subject of comparative tests for determining their individual delicacy by E. Rogovin (Berl. klin. Woch., 1903, No. 38). Urine and transudates from patients convalescing from angina and rheumatism and in whom potassium iodide formed the only medication, was subjected to all of the tests. Observation showed that in the majority of cases after 0.005, and sometimes even 0.002 to 0.003 given by mouth, iodine could be demonstrated in the urine. The most sensitive tests were those of Hartnack, using nitric or sulphuric acids, and chloroform or benzine, or those in combination with starch solution. By these, 0.002 of KI given by mouth could be detected as iodine in 700 c.c. of urine. All other tests proved negative with these quantities. Next in value is the method of Sandland, by which, after giving 0.00705 mgr. of KI, iodine could be detected in the urine.

Relation of Cyclic Albuminuria to the Circulation.—Observations in support of this theory have lately been advanced by P. Moritz (Deut. med. Woch., No. 37, 1903). He believes that this form of albuminuria is due to some insufficiency of the circulatory apparatus, for he noticed that the increased blood pressure which normally occurs after exercise of a moderate degree, was followed by abnormally low pressure in those persons who were inclined to display a tendency toward cyclical albuminuria. He made some practical tests in two patients of this type, by requiring them to lie down and then artificially inducing a disturbance of respiration by calling on them for straining efforts for ten or fifteen minutes, similar to those at stool. This was invariably followed by the appearance of albumin in the urine, although none had been present before. His treatment of cyclical albuminuria is therefore based on these measures and consists of tonics for the heart muscles and its nerves. He does not resort to rest cures, as advocated by others, and also believes that there are prospects of treating chronic nephritis in a similar manner by gymnastic therapy. A point emphasized is that the albuminuria does not come on during the increased blood pressure and respiration that accompany physical exercise, but only during the stage of lowered pressure which follows this period. The value of diuretics in these cases is due to the improved circulation through the kidneys which they produce. He draws a comparison between this form of albuminuria and convalescence from an infectious disease, except that in the former case the condition is permanent and the patient is practically a chronic convalescent.

A New Test for Albumin in the Urine.—The 40-per-cent. aqueous solution of formaldehyde, sold under the name of formalin, will precipitate serum-albumin and serum-globulin from solutions; but it produces only a slight turbidity in the presence of egg-albumin, according to N. Introna (Gazz. Osped., Sept. 13, 1903). He has used the substance in testing urine for albumin in the following manner: A half dram of formalin was added to 2½ drams of albuminous urine; the test-tube inverted several times, and then allowed to stand. The urine became at once clouded and a flocculent precipitate appeared, which settled to the bottom within a few hours. This precipitate reacted to tests for albumin. For the purpose of comparison with the usual albumin test by means of ebullition and acetic acid, the author tested 1½ drams of albuminous urine by this method and boiled a like quantity of the same urine, and to it added a quarter of a dram of formalin; a test-tube of the same size being used for both tests. The

coagulum which formed in the second tube was found to be two inches higher than that in the first. A further proof of the greater delicacy of the formalin test was found in the fact that after filtration of the specimen, which had been tested by boiling and addition of acetic acid, the filtrate showed a distinct trace of albumin upon heating and addition of formalin. The latter may also be used for the quantitative analysis of albuminous urine, but the procedure, as described by the author, is much more complicated than Esbach's method.

Dyspeptic Albuminuria.—Though this affection is of frequent occurrence, its diagnosis is always difficult, and should never be positively made till the case has been watched for some time, says M. Bureau (Gaz. Méd. de Nantes, Sept. 12, 1903). Its characteristics are described as follows: The quantity of albumin is not abundant, rarely exceeding 0.50 per liter, and is not accompanied by any increase in the amount of urine passed during the twenty-four hours. Its presence is not always constant, in which case it is absent from the morning urine passed in the fasting state. It appears or is increased after meals, and is composed solely of serin; globulin being entirely absent. Casts are never found. A certain amount of indican is present in such urine, and the earthy phosphates are in excess. No other abnormal element is found and there is no evidence of renal insufficiency. The prognosis is benign; a cure being invariably effected after suitable treatment of the underlying digestive affection. No definite therapeutic rules can be laid down, treatment varying with the individual case. A dry diet should, however, never be prescribed. While albuminuria may appear in any dyspeptic patient, it is most frequent in young patients affected with gastric dilatation and hyperchlorhydria.

Adams-Stokes Disease.—In the peculiar condition known as Adams-Stokes disease the symptoms usually encountered are bradycardia, syncope, apnea, Cheyne-Stokes or irregular breathing, vertigo, headache, angina pectoris and cardiac asthma, apoplectic attacks without anatomical lesion, epileptic convulsions and rigidity of the pupils. The patients are generally of advanced age, but there are cases on record of thirty, twenty-three and four years, respectively. That the condition is not a disease but merely a symptom-complex is evident from the various lesions found post mortem: Fatty degeneration of the heart-muscle, mitral stenosis, with aortic insufficiency, coronary embolism, stenosis of the coronary vessels, tumor of the septum and marked fragmentation of the myocardium, in one series of cases, and in another, thickening of the vagus with swelling of the upper cervical ganglion and narrowing of the occipital foramen, compression of pons and medulla, luetic tumors at the floor of the fourth ventricle, and absence of the right cerebellar hemisphere with a varix at the pyramidal decussation. D. M. De Rochemont (Münch. med. Woch., Sept. 15, 1903) adds two cases to those already published which were peculiar in that the patients recovered. In the first the pulse varied between 27 and 18 beats, but since twice as many pulsations were observed in the jugular vein and the cardiogram showed a slight, almost imperceptible, elevation between every two beats, it is probable that every second cardiac contraction was unable to force the blood into the systemic circulation. In the second case the cardiogram showed strong contractions alternating with weaker ones; some of the latter were also recorded by the sphygmograph, though imperceptible to the fingers. It was impossible here, like in most cases, to diagnose the exact anatomical lesions from the symptoms.

Chronic Rigidity of the Spine.—Rheumatic influences and trauma are generally held accountable for Bechterew's type of chronic spinal anchylosis and intoxications and infections, such as alcoholism, gonorrhea and syphilis for the Marie-Strümpell form. The pathological process is not uniform owing to the various structures which enter into the formation of the spine; thus a rigidity may follow inflammation of the vertebræ, ossification of the intervertebral disks or the ligaments, or myositis ossificans, muscular rheumatism or spastic contractions of the muscles of the back. Sometimes all structures are involved and then it is difficult to say where the process began. Then the case is interesting only pathologically, but where the muscles alone are affected, much good can be done by treatment. E. Barg (Zeitsch. f. klin. Med., Vol. 50, Nos. 3 and 4) therefore advises that special attention should be paid to the muscles in all cases. The early diagnosis should be assisted by means of the X-rays and examination in narcosis, for delay will only permit the process to extend to the joints. Often there is a history of trauma and soon after the patients complain of stiffness in neck and back and pains in the head and back, of increasing severity. The stiffness persists, prevents the patients from working and robs them of sleep. Flexion and extension of the spine are absolutely impossible and on percussing the muscles, they are at once thrown into a spastic contraction. The walk is slow and very cautious, since the patients avoid straining the spine in every possible way. When told to lie flat upon the abdomen they generally support the body and extended legs upon the stiffly extended arms and gradually lower themselves by cautious flexion at the elbows. Sometimes the arms cannot be extended beyond the horizontal, but the hips, knees and elbows are generally movable in all directions. Under chloroform complete relaxation of the spine takes place. The treatment consists in the administration of iodides and bromides, massage, warm baths, active and passive motion and galvanism. Kyphoses, so common in the osseous form, have never been described. It is possible that the stiffness and pain are caused by a hemorrhage into the subarachnoidal space, with subsequent pressure upon the emerging nerves, since occasionally altered blood is found in the fluids obtained on lumbar puncture.

Patellar Reflex in Nephritis.—There has been an increasing tendency on the part of clinicians to study the behavior of the patellar reflex in various internal diseases in the hope of discovering constant relations of diagnostic value. The most recent contribution is by A. Lion (Zeitsch. f. klin. Med., Vol. 50, Nos. 3 and 4), who finds that in the majority of cases of nephritis the patellar reflexes are markedly exaggerated. Since even the most insignificant symptoms of nephritis are considered manifestations of uremic poisoning, it is probable that increased reflex excitability must also be ascribed to this cause. Cryoscopy helps to support this theory, for almost always there is an increase of blood-concentration, even where the general condition is good. The increased patellar reflex seems to be a more delicate test than cryoscopy and is most marked in the chronic parenchymatous and the acute forms, less so in the chronic interstitial type. The presence of edema or a thick panniculus adiposus interferes with the phenomenon; with the former the nerve-fibers themselves probably become edematous, and then conduct nerve-impulses less readily. The knee-jerks also have some prognostic importance; where they increase, the intoxication is gradually becoming more severe.

Westphal's Sign in Croupous Pneumonia of Children.—Recently an absence of knee-jerks has been heralded as a new sign in pneumonia of children, especially where there is central infiltration, late appearance of physical signs or an indefinite symptom-complex suggestive of pneumonia. H. Roeder (Deutsch. Arch. f.

klin. Med., Vol. 77, Nos. 3 and 4) cannot, however, agree to this. He found the knee-jerks absent equally as often in erysipelas, measles, scarlet fever and a number of other infectious diseases and often saw them exaggerated where there was much meningeal irritation in pneumonia.

Leukanemia.—The name leukanemia has recently been applied by Leube to a peculiar set of cases where leucemia and pernicious anemia were present in the same patient. Since then several cases have been described but no one has yet attempted a clear explanation of this peculiar condition. The patient of Luce (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 3 and 4) developed a simple anemia with absolute increase of unicellular elements after what appeared to be a simple attack of tonsillitis. After six weeks the case could be pronounced one of lymphatic leucemia and 3½ months later the anemia had become pernicious in character. Retinal hemorrhage, heart murmurs and enlarged cervical glands appeared later, and shortly before death the spleen could be palpated. On autopsy the lesions of pernicious anemia with leucemic infiltrations in the various organs, were found, but strangely, siderosis was absent. Luce believes that these cases should be classified among leucemia; the fact that Charcot-Leyden crystals do not occur in the bone-marrow, eosinophile cells are diminished and siderosis does not occur, is not sufficient reason to set them apart as a separate symptom-complex. In all cases of leucemia, an anemia is present; if it takes on a pernicious form, this is merely a quantitative difference. Though the leucemia was lymphatic in the author's case, autopsy proved that it was due to a lymphadenoid metaplasia of the bone-marrow rather than a hyperplasia of normal lymphadenoid tissue; it is thus probable that this metaplasia is able to stimulate the erythroblastic tissue, as a consequence of which the cells typical of pernicious anemia appear in the blood. A leukanemic blood has been described with tumors of the bone-marrow, after hemorrhage and in poisoning with nitrobenzol and arsenic, which proves that both lymphopoietic and hematopoietic constituents may be stimulated by the same cause. The same holds true for the anemia pseudoleucemia infantile of v. Jaksch. Even in simple pernicious anemia there is often a relative lymphocytosis. The unknown agency which underlies leucemia thus attacks the bone-marrow as a whole like all other poisons which induce myeloid changes. The fact that leukanemia may in some cases first impose as leucemia, in others as pernicious anemia thus finds a ready explanation, but no matter what the early blood-changes, the end result will always be the same. It is even possible that in all cases of pernicious anemia, the first lesion is a moderate leucemia metaplasia of the marrow; this will stimulate the erythroblasts to proliferate like tumor-cells. From the few cases observed it is impossible to say if absence of siderosis in the liver, etc., is characteristic for leukanemia.

Bodily Exercise in Cardiac Disease.—In myocarditis, O. Moritz (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 3 and 4) finds that bodily exertion brings about an increase of blood-pressure which frequently falls before the period of rest without, however, reaching normal figures. With rest the pressure slowly returns to normal like in healthy individuals. If the rise is but slight, severe cardiac disease is present. In valvular disease the pressure may remain normal if the lesion is moderate; when more advanced, it behaves as in myocarditis. Exceptionally there may be an initial fall but then the valves are much diseased. Differences between aortic and mitral lesions or between stenosis and insufficiency were not present. The general circulatory disturbance and the condition of the heart muscle play a more important part. In all patients suffering from heart trouble the blood-pressure may fall below normal during the period of rest as a result of cardiac fatigue. The degree of blood-pressure is not a criterion for the loss of compensation. K. Hasebroek (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 3 and 4) writes upon the same subject and concludes that the brilliant results obtained with gymnastic exercise in circulatory disturbance are restricted to those cases where the peripheral circulation suffers with healthy heart. Where the heart itself is diseased, good results are only forthcoming if the peripheral vessels are favorably influenced. Gymnastics are an important prophylactic measure in the early stages of circulatory disturbance and compensated heart-failure, since the development of the vitiary circle is prevented or delayed.

SURGERY.

Control of Hemorrhage after Pelvic Operations.—In cases where after extensive pelvic operations there has occurred bleeding from raw surfaces or veins which it was impossible to clamp or suture, the use of a rectal proctoscope introduced through the abdominal wound for both examination and packing the pelvis with gauze, is recommended by J. A. Sampson (Johns Hopkins Hosp. Bull., Sept., 1903). In suitable cases the lower end of the abdominal incision is opened and the proctoscope introduced with very little pain. The obturator may then be removed and the pelvis may be inspected by moving the instrument from side to side, using reflected light and a head mirror. Gauze may then be introduced through the tube with the aid of a long forceps and by turning it from one side to the other, all parts of the pelvis may be reached, and the instrument is then gradually withdrawn as the pelvis becomes filled with gauze. Several drains may be introduced in this manner and the projecting ends folded over the incision and covered with pads. A tight abdominal binder is put on and the vagina is also packed in such a manner as to elevate the cervix. A firm pad is then placed over the vulva and held in place by a perineal strap. The author cites a number of cases in which the method was successfully employed and believes that a diagnosis may be made in obscure cases without causing much shock or pain, that hemorrhage may be controlled, that the gauze is introduced through a sterile tube and without pain, and that the instrument in question is easily manipulated and admits wide strips of gauze.

The Etiology of Harelip.—This much-disputed question has been the subject of an extensive study by T. Haymann (Archiv f. klin. Chir., Vol. 70, No. 4). From a study of the literature and a large amount of embryological material, he concludes that the deformity is not caused by the formation of amniotic bands as stated by some observers. For, as a rule, trauma caused by the latter are distinguished by their multiple character. If amniotic bands are present in a pregnant uterus, their effects are not confined to one part, but are usually also distributed over the trunk and extremities. The rare occurrence of amniotic deformities of the limbs in comparison with the rather frequently found examples of harelip makes it seem somewhat improbable that the development of amniotic bands plays any considerable rôle in the development of a typical harelip or cleft palate. It is known, moreover, that many individuals afflicted with harelip also present other evidences of incomplete development, in the brain, the spinal cord, the sensory organs, the vascular system, the urogenital tract and the abdominal wall. In 11 cases of harelip there has also been reported polydactylism, which seems entirely opposed to any amniotic influence and considered in connection with the other facts seems to point less

to trauma caused by amniotic bands than to interferences in the development due to other causes. Summing up the evidence adduced by the author we find that these defective developments are the results of hereditary influence. He shows that in certain families, there has been a tendency to these malformations, extending through three or four generations. One or two generations may be entirely free from trouble, but in the third it again reappears.

The Discovery of the Stomach Tube.—It is generally believed that two English surgeons, Jukes and Bush, are the inventors of the stomach tube. It was introduced by them in 1822, for the purpose of evacuating the stomach in cases of poisoning. J. Friedenwald (Johns Hopkins Hosp. Bull., Sept., 1903) thinks that the credit of the invention belongs to P. S. Physick, of Philadelphia, who first used the tube for the same purpose, as early as 1800, and recommended it to his students in the course of his lectures for many years. By his advise the tubes were made in Paris in 1803. In 1812, he published several cases of poisoning where it was used successfully. Friedenwald has found references to this in early American medical journals and the facts are corroborated by other writers well-known at the time.

Celluloid as a Material for Flatfoot Plates.—In some ways sheet celluloid makes an ideal material for foot plates for it can be molded on a plaster cast to any desired shape in a few minutes by the use of boiling water, besides having the advantage of being light, cheap and non-corroding. H. W. Jones (N. Y. Med. Jour., Sept. 5, 1903), after considerable experience with it in comparison with other materials, especially steel, finds that it is deficient in two very important qualities which steel possesses, namely, rigidity and durability. Celluloid plates are unable to support the longitudinally flattened arch in an adult unless a very heavy grade is used or unless made with both an inside and outside flange running the whole length. If the latter conditions are fulfilled the plate takes up too much room to be comfortably worn. In beginning flat-foot, where a springy plate is desired or in children it is possible to use this plate in the longitudinally flattened arches. In cases of flattened transverse arch, in the so-called Morton's disease, its use has proven very gratifying, especially as most of the cases are nervous women who appreciate a light plate. Furthermore, as the curve is short instead of long and sweeping, the plate does not flatten out so easily. He concludes that although celluloid is a cheap material for flat-foot, easily made and altered, its limitations and unreliability make it far inferior to steel for general use.

Value of Intestinal Peristalsis in Diagnosis of Abdominal Wounds.—The presence or absence of peristaltic movements in the intestines as elicited by auscultation is considered a very important sign in non-penetrating wounds of the abdomen by O. C. Gaub (Penn. Med. Jour., Sept., 1903). From his clinical experience in a number of cases of abdominal injury of this character, he was led to determine by animal experiment whether peristalsis ceases after a violent blow on the abdomen, whether there is an approximately definite time when it returns, provided no hemorrhage or laceration of the gastro-intestinal tract occurs, and finally, if a tear occurs in the gastro-intestinal tract allowing the escape of its contents, whether the primary arrest of peristalsis is made permanent by the beginning peritonitis. A number of dogs under anesthesia were subjected to violent blows on the abdomen. It was found that peristalsis immediately ceased when such a blow was struck, that after a time peristalsis returns if no injury to the tract has taken place, the time coinciding with the general subsidence of the symptoms of shock. The author concludes from these experiments and the clinical cases he has seen that any injury to the abdomen sufficient to abolish peristalsis is a grave one, and if at the end of four hours, all means having been instituted to combat shock and no peristalsis returns, and if the pulse increases in frequency, sufficient evidence is at hand to justify operation.

Operations in Diabetic Patients.—There is a well-marked antithesis to operating on patients afflicted with diabetes, and it is widely believed that sloughing in an operative wound is to be expected. C. P. Noble (Am. Med., Sept. 26, 1903) believes that this view had its origin in the fact that most operations undertaken in diabetics were for gangrene and therefore does not form a fair criterion. The author has operated on seven women suffering from diabetes mellitus, six of which made good recoveries and the other died from coma on the sixth day after operation. All were major operations and to this number the author has added 62 cases collected from the literature. The total showed a mortality of 24 per cent., about half of which died from diabetic coma after the operation, but the operative results were good. The rule to which the author adheres is that operation is postponed if there is more than two per cent. of sugar in a total excretion of three pints daily. In all cases preliminary treatment by strychnine and codeine was followed. This was also given after operation in addition to free use of salt solution per rectum and under the skin. The counter-indication to operation is strongest in those patients suffering markedly from the constitutional symptoms of diabetes—poor nutrition, wasting, intense thirst and morbid appetite.

Decapsulation of the Kidney.—The operation announced by Edebohls in 1901 is discussed in its various aspects by J. Tyson and C. H. Frazer (Univ. Penn. Med. Bull., Sept., 1903), who also report a case in which it was tried with favorable results. The patient, a girl of nine years, presented evidences of a type of post-scarlatinal nephritis, which persisted for five years with acute exacerbations. Her condition finally grew desperate and as no relief could be secured from any further medical treatment, decapsulation was done first of one kidney and then the other according to the method indicated by Edebohls. After the first operation the excretion of urine was immediately increased from 21 to 63 ounces on the fifth day. On the tenth day the ascites and anasarca had entirely disappeared and the albumin diminished from one-half to one-tenth in volume. Two months later the second operation was done with similar effects. After the patient was allowed to get up, the albumin again increased in amount, but the urine was secreted freely and the casts were mainly hyaline. Her general condition continued good to the time of the report. The urinary conditions prevent the claim being made for a cure, but undoubtedly the patient's life was saved by the operative treatment. In discussing the ultimate results, the authors, from the knowledge of the histological changes that take place in the tissues that have been subjected to such manipulations as are prescribed and from the results of the experimental work done by Johnson on dogs, where it was shown that decapsulation does not produce any increased vascularity in the perirenal tissue, conclude that in the course of time, through the organization of the granulation tissue into connective tissue, the kidney will be again surrounded by a fibrous capsule and one probably several times thicker than the original one. The operation therefore seems irrational, although it must be admitted that the clinical results are favorable and cannot be disregarded. They would perform the opera-

tion in a patient in whom all other attempts at alleviating the condition had failed, and death was imminent, provided it was reasonable to assume that the patient would survive the immediate effects of the operation.

Tuberculous Rheumatism.—Whether or no rheumatism really occurs as a complication of tuberculous affections of the skin, whether it is of real clinical importance, has special characteristics and develops under definite conditions of age and sex, are the problems the solution of which Bouveyron (Rev. de Chir., Sept., 1903) has sought in a study of 44 cases of lupus vulgaris and two of lupus erythematosus. Of this number, 14 presented definite symptoms of tuberculous rheumatism. He finds that the latter is a very rare complication of lupus vulgaris in children under fifteen years; in adults, however, in whom the disease attains a greater severity, rheumatism is a frequent complication. The arthritic form, with or without exudation or tumefaction, is most frequent. These arthralgias are mono- or polyarticular, indolent, but moderately painful and rebellious to all the classical methods of treatment. They may disappear temporarily to return in the same or a different joint; or they may improve without any apparent reason or in the course of a febrile disease. The condition of the lupus does not seem to directly influence the affection; neither is there anything special in the general condition of the patient. The ostalgical or hyperostosic form ranks next in frequency; in the author's cases being met with only in women and in the proportion of four in seven. The hydarthritic form of rheumatism was seen in lupus patients in the proportion of three in twelve. The pathogenesis of such rheumatic affections is not understood.

Tumors of the Retrocarotid Gland.—A contribution to the literature of this subject is made by P. Reclus and M. Chevassu (Rev. de Chir., Sept., 1903), who give a detailed description of a case which came under their care. The etiology of these tumors is not understood, but they occur in early life; in the few cases reported, the affection having been seen between the seventeenth and thirty-third year. They seem to be made up in most cases, as in that described by the authors, of blood-vessels and numerous cells of undetermined origin, the whole enclosed in a capsule. Of slow growth, the patient becomes aware of the existence of the tumor by chance or after it has gained sufficient size to cause some discomfort; slight pain in its neighborhood, in some cases, first calling attention to it. With the head slightly extended, the outline of the tumor may be readily recognized and at the same time it may be seen to pulsate; these pulsations being synchronous with the radial pulse. The tumor occupies the carotid region, embracing the division of the common carotid and the bifurcation of its two initial branches. Its size is said to vary between that of a pigeon's and hen's egg, it is generally soft and elastic, quite mobile transversely, but slightly so vertically and it may be made to disappear under pressure; though upon withdrawal of pressure, it regains its former size within two or three successive pulsations. Auscultation over the tumor may reveal a systolic murmur. The pulsation seen is the most striking symptom, this being synchronous with the radial pulse, non-expansile and disappearing upon compression of the common carotid. The authors state that a positive diagnosis of tumor of the retrocarotid gland may be made in the presence of a single, soft, pulsating, non-expansile tumor of slow development, in the carotid region at the level of and above the thyroid cartilage. Treatment is surgical, consisting in extirpation of the tumor.

Retraction of the Palmar Aponeurosis.—There is much to indicate that this condition is related to a trophic disturbance depending upon some lesion of the nervous system; but the case reported by C. Féré and R. Demanche (Rev. de Chir., Sept., 1903) seems to point to its origin in a lesion of a peripheral nerve rather than of the periependymal gray matter. The patient, who came under treatment for mental disturbance and tendency to melancholia, gave a history of a fracture of the lower part of the right forearm, treated by immobilization during two months. A month after removal of the apparatus, he noted that the finger had a tendency to become flexed upon the palm and was extended with difficulty. The condition progressed from this time till he came under the authors' observation, four years after the injury, when the hand presented the characteristic deformity of retraction of the palmar aponeurosis; the most striking feature of which was the permanent flexion of the fifth finger, accompanied by muscular atrophy in the region supplied by the ulnar nerve. The fourth finger was also slightly flexed at the metacarpophalangeal articulation and the joints of the second and third phalanges of the last four fingers were somewhat enlarged. The whole palm was markedly concave and the hypothenar eminence flattened from atrophy of the muscles. Upon palpation, a fibrous band could be felt extending from the base of the fifth finger to the annular ligament whence it threw out a prolongation to the base of the fourth finger. In addition to the gross appearance of the deformity characteristic of fracture of the lower extremity of the forearm, the X-rays revealed a separation of the styloid process from the ulnar bone and to this the authors especially attribute the lesion of the ulnar nerve and consequent deformity of the hand. Upon the discovery of this unreduced fracture they base their diagnosis of the peripheral origin of the palmar retraction; though the patient's inherited neuropathic tendency, together with some evidence of a rheumatic diathesis, seen in ulnar deflection of the fingers of the left hand, constituted nice points in the differentiation of the affection.

Operation for Femoral Hernia.—The disadvantages of most operations for femoral hernia, says P. Herzen (Centralbl. f. Chirurg., Sept. 12, 1903), lie in the fact that the periosteum over the convexity of the pubes cannot be grasped sufficiently with a curved needle to allow Poupart's ligament to be fixed firmly to it. The pectineal fascia must also be used, which leads to a wide gaping of the external abdominal ring and does not close the femoral canal. The following method is therefore recommended: Incision through skin and connective tissue and dissection of the hernial sac as usual. A ligature is placed around the neck and the sac then amputated. The femoral vein is then freed somewhat and pulled inward and Poupart's ligament displaced upward so that the entire femoral canal is exposed freely. A flap of periosteum 1 to 1½ cm. long and as broad as the femoral canal, with its base at the pectineus, is then turned downward from the upper surface of the horizontal ramus of the pubis. Two to four fine canals are now bored through the bone, so that the drill comes out upon the surface bared of periosteum. Several wires of aluminum-bronze are passed through Poupart's ligament and through these canals and tied so as to bring the ligament close to the bone. Finally, the periosteal flap is sutured over the ligament and the skin-wound closed.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Solitary Tubercle of the Stomach.—A form of tuberculosis hitherto undescribed was found at autopsy by R. McL. Van Wort and is reported in the Johns Hopkins Hosp. Bull., Sept., 1903. No previous history was obtained from the patient, a negress eighty-eight years of age, who died from exhaustion a few days after

entering the hospital. The post mortem showed the general sclerotic senile changes in vessels and organs, and, in addition, ulcers and caseous tubercle of the stomach. Examination of the latter showed it to be similar to that found in the central nervous system. It was completely surrounded by unstriped muscle and was the primary seat of the disease in the stomach. The original entrance of the infection could not be traced. The tubercle bacilli were found in the tissues and recovered from an experimental animal with the production of the typical lesions of tuberculosis. Clinically the case is of little interest, as the condition probably gave rise to no symptoms during life. The tubercle could readily be felt through the stomach wall after autopsy, but as it was situated under the costal margin, it could not have been felt during life.

Origin and Characters of the Alexins.—This subject has been investigated for some years by R. TURRO (Berl. klin. Woch., Sept. 7, 1903). He has been able to demonstrate that the alexins are a product of the cell plasma. They become functional when dissolved in physiological salt solution. The characters of the individual alexins vary with the cell plasma from which they are derived; some are efficient against one species of bacteria, some against another. Alexins were experimentally demonstrated in the thyroid, in the suprarenal capsules, the kidneys, the lymph glands, the muscles, in the liver and spleen, in the blood plasma. From the chemical standpoint, alexins may be considered as enzymes, which digest the bacteria by means of a progressive hydrolysis. The degree of the resistance which an organism exposed to infection manifests (that is, the natural immunity), depends on the physiological processes in the cell plasma which favor the solution of the alexins and in this way bring them into action.

Cause of Gaseous Infection.—Besides the specific gas-producing bacilli, gaseous phlegmons can also be set up by the ordinary colon bacillus. From a case of delirium tremens with gas infection of the arm, D. DANSAUER (Münch. med. Woch., Sept. 8, 1903) could isolate the colon bacillus together with three other pyogenic germs. Experimental inoculations of culture of these germs, gave rise to gaseous phlegmons most often when both streptococci and colon bacilli were injected. It seems that the action of the colon bacillus is a purely saprophytic one and that it merely decomposes tissues of low vitality, such as occur with diabetes, alcoholism, etc., or tissues rendered necrotic by the action of other bacteria. Introduced alone into the healthy human body it is not capable of producing gas.

Pathogenesis of Neuroparalytic Pneumonia.—The pathogenesis of pulmonary inflammation following section of the pneumogastric nerves is a subject of conjecture among pathologists and physiologists alike. T. CIVILETTI (Gazz. Siciliana di Med. e Chir., No. 20, 1903) has contributed his quota toward the solution of the question by a series of experiments upon rabbits, which seem to show that vagotomy induces such a decreased resistance in the pulmonary tissue as to render it fit soil for the multiplication and development of pneumococci and the attendant inflammatory reaction in the lung. The author's work embraced immunization of the animals against the pneumococcus with Pare's and Rerzi's serum, bilateral vagotomy and subsequent inoculation with virulent cultures of pneumococci. In nine rabbits immunized and vagotomized the classical pneumonia developed, whether subcutaneous inoculation with pneumococci had been practised or not. The same result was seen in non-immunized animals subjected to vagotomy and subsequent inoculation. On the other hand, inoculation of non-immunized and non-vagotomized animals with the same cultures resulted solely in diplococcic septicemia without pneumonia.

OBSTETRICS AND GYNECOLOGY.

Removal of Uterus in Double Pyosalpinx.—Clinically there has been observed a purulent endometritis in a very large percentage of the cases of pus tubes which MANN (Am. Gyn., July, 1903) has operated upon. If this be admitted, why leave the uterus to be a source of suffering and possible infection afterward? One has seen many cases where after removing the pus tubes the patient has not been symptomatically cured, discharge and pain are frequently observed, and sometimes metrorrhagia, and the removal of the uterus has later become necessary. In a small proportion of cases, menstruation continues for a time, for years perhaps, after removal of both tubes and ovaries, but it is rarely normal, being more often the source of various troubles. The removal of the uterus in such cases does away with the trouble and the necessity for further treatment. The occurrence of cancerous disease of the uterus after removal of the tubes and ovaries is very rare, as statistics will show. Still the possibility of such an occurrence in an organ rendered functionally incompetent ought to be enough to favor its removal. Perhaps the strongest argument for its removal is to be found in cases where the infection is still acute. If the uterus be extensively diseased—that is, involved in inflammation, and be left in a ragged and disorganized condition, after the adhesions are broken up and the appendages are removed, or if it be greatly enlarged, then its removal seems to be a matter of course, as it is likely under those circumstances to make more trouble than would possibly be caused by its removal. The French operators remove the uterus as a matter of routine. One of the arguments set forth against the removal of the uterus is that the sexual life of the woman is destroyed thereby. This is not so, as the sexual life is in no way dependent upon the presence of the uterus, but upon the presence of the ovaries, which are the dominating factors in sexual matters. It is always best to preserve them, where possible, in a woman under forty years of age. There is in the author's mind no extra risk to the patient in the removal of the uterus, but, on the contrary, one gets much better drainage, which adds to the security of the operation. Atrophy of the vagina, which is sometimes seen to follow the removal of the uterus and appendages, is not due to removal of the uterus, but to the establishment of menopause by the removal of the ovaries. The author has never seen anything approaching hernia or prolapse of the pelvic contents, due to the removal of the uterus, except in some cases of procidentia.

Iodine Treatment of Puerperal Sepsis.—An investigation of the uterine discharges and the contents of the pelvic cavity in cases of puerperal sepsis has resulted in a more definite idea of the conditions which must be treated. W. R. PRYOR (N. Y. Med. Jour., Aug. 22, 1903) has operated upon 37 cases, in all but one of which streptococci, generally mixed with other germs, have been found in the uterine discharge and in all the cases streptococci were found in the pelvic cavity. He not only does a curettage in these cases and packs the cavity with iodoform gauze, but he also does a posterior section of the vagina and packs the cul-de-sac full of iodoform gauze. The results have been uniformly good and on the third day the germs have been absent from the discharges in every case. This excellent result is attributed to the local iodism which is caused by the action of the exudates upon the iodoform, thus setting free iodine. The absorption of this iodine through the infected lymphatics is supposed to have a decided and beneficial effect. The after-treatment of these cases is so technical and consumes so much time that it would be difficult to secure for

it a very general adoption. Attempts are now being made to secure this local and general iodism by more easily effected means.

Indications for Inducing Labor in Hyperemesis and Heart Disease.—In considering the advisability of inducing labor for hyperemesis during pregnancy, O. Tuszkai (Berl. klin. Woch., Vol. 40, No. 35) urges conservatism, until the true cause of the complaint can be ascertained. It has already been pointed out that in many cases, hysteria is the direct cause of this condition and in others an intercurrent disease, such as meningitis, gastric trouble, nervousness, or peritonitis, may be at fault. The author believes that the only cause for a true hyperemesis gravidarum, which does not disappear until pregnancy is interrupted, is to be found in a perimetritic irritation. The latter is due to an anemia of the perimetrium brought about by the inability of the peritoneum to stretch in proportion to the increase in size of the pregnant uterus. It is essential to exclude, therefore, all other factors, especially hysteria, by the application of all possible diagnostic and therapeutic measures. The diagnosis of a pregnancy itself being at fault must be based on the following signs: Increased tendency to vomiting on local irritation, such as a bimanual examination, especially in those cases where it is known that a previous perimetritis has interfered with the elasticity of the peritoneum. Even then radical measures should not be undertaken until local treatment which endeavors to improve the circulation of the parts in question (heat or cold on the abdomen or per vaginam) has proved ineffectual, and the prostration has reached a comparatively high point. The latter must be judged by the rapid decrease in body-weight, in amount of urine voided daily, and in the number of the red blood cells; also by the increased specific gravity of the urine, the increase in the alkalinity of the blood, and the greater frequency in the pulse rate. If in these advanced cases large doses of opium do not help, by inhibiting the functions of the excretory organs, immediate delivery should be undertaken. Regarding cardiac disease, the author believes that particular attention should be paid to the behavior of the pulse where it is known that heart lesions have at any time been present. He was able to prove that irregularities in the pulse rate which had disappeared when compensatory hypertrophy was established, became evident again during the course of a pregnancy as the sign of a consecutive dilatation. When this sign appears early in the course of a pregnancy, where previous heart lesions had been present and does not readily respond to treatment, it is advisable to interrupt the pregnancy rather earlier than has hitherto been the case. Where the pulse symptom does not appear until late in the course of the pregnancy, labor need rarely be induced, but the incompetency must be carefully watched.

Pregnancy During Lactation.—Attention is called to the danger of allowing these two conditions to overlap by H. M. Church (Edinb. Med. Jour., Sept., 1903). In the first place he believes that it is much more infrequent than ordinarily supposed, about 30 in 1,000 cases, which came under his own observation. He states that from his own experience the suckling was or became a delicate child, and usually at some time suffered from some affection of the nervous system or was the mentally weak one of the family. During lactation the embryo was apt to be prematurely expelled from the uterus, or if did reach full term, in many cases it did so with lowered vitality. In addition, the health of the mother was generally undermined for a longer or shorter time. Whenever a diagnosis of pregnancy is made during lactation, the nursing child should be weaned at once. Ten cases are detailed which support the author's contention. The breast milk is shown to be changed during menstruation and a greater change occurs from a new pregnancy.

Ichthyol in Puerperal Fever.—On account of the frequency with which an infection of the uterus after delivery extends beyond the point where simple curettage can be effectual, the knowledge of an agent which may also penetrate the walls of the womb and counteract the poisoning effects of the bacteria would be most welcome. J. O. MacPherson (Med. Rec., Sept. 12, 1903) has made use of ichthyol in five severe cases of puerperal fever and claims excellent results for this method treatment. In these cases the uterus was first thoroughly irrigated with a bichloride (1 in 4,000) solution and the uterus packed with gauze soaked in equal parts of ichthyol and glycerin. In two of the cases instead of ichthyol gauze two drams of a 50-per-cent. ichthyol watery solution were injected into the uterus. The improvement was very noticeable in each case. The irrigations and ichthyol applications were repeated in some of the cases, but the improvement which followed was attributed to the beneficial influences of ichthyol.

Chorionepithelioma.—The chief problem of deciduoma malignum, as of other malignant tumors, is, according to J. H. Teacher (Brit. Jour. of Obstet., Aug., 1903), how to make our observations of its nature and origin applicable in the treatment of the patient. The so-called deciduoma malignum is a tumor arising in connection with pregnancy, and originating in the chorionic epithelium (or its forerunner, the trophoblast), which is of fetal epiblastic origin. These tumors form quite a characteristic group clinically, pathologically and developmentally, and they should be classified neither as sarcomata nor as carcinomata, but as a distinct class sui generis. The most appropriate name is chorionepithelioma malignum. Malignant hydatiform mole may be treated as a variety of this disease. In addition to the common tumors developing from a pregnancy, there are tumors containing precisely similar structures which are not connected with pregnancy, and may occur in other parts of the body and in either sex. The most probable explanation of them is that they are teratomata, originating from some structure which has the morphological value of an included and fertilized ovum, and the chorionepitheliomatous tissue represents the actual trophoblast (chorionic epithelium) of the included ovum. Special care must be exercised in diagnosing between hydatiform mole and chorionepithelioma arising in connection with that condition. While the prognosis in all cases of chorionepithelioma is a grave one, early recognition and an early radical operation offer a fair chance of recovery. The fact that metastasis has occurred does not necessarily preclude successful operation, although it materially diminishes the chances of success.

Necrobiosis.—In a study of this variety of necrotic change taking place in fibromyomata of the uterus, John S. Fairbairn (Brit. Jour. of Obstet., Aug., 1903) finds the following points borne out: (1) The tumors most frequently affected by this fleshy necrobiotic change are the interstitial fibroids of moderate size. (2) In spite of their blood-stained appearance, they are not engorged with blood, and hemorrhage and vascular congestion are not the marked features in these tumors, as is seen as the result of interference with the venous return. The characteristic change is one of necrosis, as is seen by the disappearance of the nuclei, or by their inability to take up nuclear stains, and, later, by a softening or a disintegration of the muscular fibers. Their color is probably due to a diffusion of blood pigment through the dead tissue by a process similar to that which occurs in the laking of blood. (3) The change begins in the center of the tumor, and when it is partial the central portions only are involved. In the ma-

jority of incidents, however, the whole growth is found to be affected. (4) The process occurs most frequently during the child-bearing period of life, and pregnancy has a distinct predisposing influence in its production. (5) Pain is a very frequent symptom, and is the most common cause of surgical interference; tenderness of the tumor is less frequently observed; fever is unusual. The symptoms produced by these necrotic changes are scarcely sufficiently defined to lead to a recognition of the change having taken place. The occurrence of severe pain in a patient with fibroids, especially during pregnancy, or shortly after its termination, strongly suggests a necrotic process in the tumor, and gives a distinct indication for operative interference.

The Value of Conservative Gynecological Operations.—Compared with radical procedures, says W. P. MANTON (Am. Gyn., August, 1903), in which the mortality, according to Hector Treub's latest statistics, of from 5 to 6 per cent. in the hands of the best operators, the mortality from conservative operations on the uterus and its appendages but 2 per cent., at the very highest, is certainly in favor of the latter. The percentage of somatic cure in either case is more difficult to estimate, but from the literature of the two methods, one is certainly convinced that conservatism offers the better prospects for the patient's future. But symptomatic cure is not all that must be considered in this connection, and the true value of conservative surgery of the pelvic organs cannot be estimated alone from this point of view. In forming conclusions we must take note of the rapid convalescence following reconstructive surgery, the more satisfactory improvement in the general health of the patient, the maintenance of the normal functions of the reproductive organs, and the possibility of future pregnancy which non-destructive surgery alone can offer. Extirpation of the ovaries, besides imposing sterility, deprives the system of the internal secretion of these organs, a principle absolutely necessary under ordinary conditions to the continuance of somatic well-being and the absence of which, as Brown-Séquard long ago pointed out, is felt by the whole economy. Ablation of the uterus deprives the individual of the hope of maternity, and in this way, as well as reflexly, may lead to both mental and bodily disturbance. To the candid mind there can be no question as to the value of conservatism as against radicalism.

Parturient Uterus Fixed in Retrolateroversion.—In a clinical and anatomical study of a case of this variety, MM. PINCARD, SEGON and COUNVELAIRE (Am. de Gyn. et Obstet., July, 1903) have arrived at the following conclusions: (1) Certain extensive parametritic adhesions fixing the uterus in vicious irreducible position are not incompatible with the evolution of pregnancy to term. (2) In the case studied the anterior wall of the uterus was markedly thickened, whereas the posterior wall was diminished in its muscular development. (3) The irreducible fixation of the body of the uterus in retrolateroversion had produced an atypical development of the lower uterine segment consisting in an enormous partial distention of the region nearest the abnormally developed deviated axis of the body of the uterus. (4) The vicious position of the fetus was consistent with the complex distortion of the uterus and the unequal development of the different portions of the generative organ irreducibly fixed in the vicious situation. (5) Dystocia necessitated, for the safety of the mother and child, a Cæsarian section followed by a hysterectomy. (6) The success of the intervention was complete, both for the mother and child.

Biochemistry of Pregnancy.—Some interesting experiments have lately been conducted by E. OPITZ (Deut. med. Woch., No. 34, 1903). By the injection of human placental tissue freed from blood, into animals (rabbits, goats, heifers and horses) he secured a serum, which he calls "syncytiolytic," and which he applied in several cases of eclampsia. It was found to display an antitoxic power against the assumed syncytiotoxins, which the author believes are circulating in the blood in eclampsia and form one of its etiological factors. This process he explains as follows: As soon as the maternal blood penetrates the trophoblasts, cells from the periphery of the ovum find their way into the maternal blood and are carried away into various organs. These deported cells are destroyed sooner or later, under the action of cytolysins formed in the blood of the mother, and their disintegrated particles have a toxic action as foreign bodies. To neutralize these, another substance is produced in the blood, the "antisyncytiotoxin." Opitz has succeeded in reproducing this process in animals by injection of placental tissue and their serum acquires the properties of an antisyncytiotoxin. The results of the application of this serum in eclampsia have encouraged the author to advise the preparation of this serum in marketable quantities. It was proven absolutely harmless and the details of its action, etc., will be given in a later communication.

PEDIATRICS.

Metabolic Experiments on the New-born.—A comparison of the results obtained in a careful series of experiments, revealed to O. ARONSTAMM (Archiv f. Kinderheilk., Vol. 37, Nos. 1 and 2) that small infants, for each unit of bodily surface, use up a greater amount of energy than larger infants, which result modifies the law of Rubner that the needs of nutrition are proportional to the absolute extent of surface.

Whole Milk in Infant-feeding.—Since 1901, Dr. Oppenheimer, in the Munich Ambulatorium, has used whole milk in the feeding of infants. In spite of the unfavorable results obtained by other observers, those obtained in Munich have been good. In generalizing from an analysis of 129 of the recent Munich cases, ELEANOR FITSCHEN (Archiv f. Kinderheilk., Vol. 37, Nos. 1 and 2), gives the following rules for the use of undiluted cow's milk in the feeding of both healthy and diseased children. In the case of children that have been habituated to another method of feeding, the use of whole cow's milk should be gradually introduced. In the presence of acute gastric disease, whole milk should be excluded and should be reintroduced only after the use of diluted milk. An exception to this rule is when ass's milk is administered undiluted after the use of the so-called tea-diet. In the instances of infants suffering from acute diseases like pneumonia, it is not advisable to change the nourishment if the previous method of feeding has been well borne. Children in the first ten days of life should receive diluted milk, not because this period is considered a certain contra-indication to whole milk feeding, but because it has not yet been established that whole milk during the first few days is successful. Overfeeding should be carefully avoided. Breaking this rule results in sad, frequently fatal consequences. The following is given as an example of a successful case of feeding by this method: An infant that during the first four weeks of life, had received besides the breast-milk various forms of diluted milk, was brought to the clinic suffering from constipation. The whole milk treatment was begun gradually, the child at first receiving 300 grams milk and 400 grams water in 7 feedings, at intervals of three hours. The strength of the milk was gradually increased until at the end of fifteen days, the child received 700 grams of whole milk in 7 feedings. In the weaning of breast-fed children, the following rule should be observed: By weighing the child before and

after nursing, one should determine how much milk the child has taken from the breast in one day. The following day the child is given half as much cow's milk diluted with an equal quantity of water. The dilution is gradually diminished from day to day until whole milk is attained. As regards the age at which whole milk feeding is begun, there is no substantial difference between the results in children from four weeks to three months, and in children from three to six months. The results are rather better in the younger children. In infants under four weeks the results are less satisfactory.

Pneumatocele Cranii Occipitalis.—The careful study of a case presenting this condition, that of a child, three years old, enables J. de Bary (Archiv f. Kinderheilk., Vol. 37, Nos. 1 and 2) to characterize this disease as follows: The swellings have been incorrectly considered chronic. The possibility of an acute course is proved by the fact that in the case reported, the process from the beginning until the spontaneous cure, lasted ten days, and five months later no change in the skull was noticed. An examination of the skull later, when healing was complete, revealed the fact that the thickenings at the base and borders of the swelling, which are usually attributed to changes in the bones, are rather due to the lifting up of the periosteum, analogous to the cases of cranial wounds and hematomata.

Effect of Addition of Alkalis to Cow's Milk.—It is generally supposed that cow's milk is acid and breast milk alkaline, so that the chief object in adding lime water or soda to the former in modifying it for infant feeding is to render it alkaline and hence less disturbing to the stomach. C. Kerley, A. H. Gieschen and G. T. Myers (Med. Rec., Aug. 8, 1903) have made a careful investigation of the reaction of breast milk and find that it is normally acid and that the addition of the usual amounts of lime water to cow's milk do not actually turn the milk alkaline, although the litmus paper may become blue. The use of this paper is, furthermore, very unsatisfactory, for it varies greatly in regard to its reaction to acids and alkalis. Milk is known to be frequently amphoteric and by selecting particular samples of litmus paper widely different results can be found. The beneficial effect which the use of alkalis seems to have was next studied and it was found that both lime water and sodium bicarbonate had the distinct and constant effect of inhibiting the formation of curds when pepsin was added and also prevented the formation of too dense curds which interfere seriously with the complete digestion. The teaching that lime water or bicarbonate of soda should be added to fresh milk or feedings simply because they are antacids is erroneous.

The Treatment of Clubfoot Under Three Years.—Nothing more is needed to correct this deformity than a succession of plaster bandages properly applied. A. R. Sands (Am. Jour. of Obst., Aug., 1903) describes the following method, which he first advocated in a paper read before the Orthopedic Section of the New York Academy of Medicine in 1893: First apply a piece of felt to both the inner and outer borders of the foot, extending it over the malleoli. This is done as an extra precaution for the protection of the bony prominences, being needed especially over the metacarpophalangeal joint of the great toe, and over the cuboid bone—this being usually very prominent. Then apply at least two thicknesses of canton flannel to the foot and leg, extending it to the tuberosity of the tibia. Now, having the foot and leg well protected, the plaster is applied also up to the tuberosity of the tibia. This will prevent the leg from moving in the plaster cast, and give a better leverage when the twisting process is begun. Care should be had to have the toes held in their natural relation to each other. The plaster should extend well over the toes, but their ends should be exposed. While waiting for the plaster to set, grasp the leg with one hand, holding it firmly on the table, and with the other hand press on the plantor surface with a board; this serves the purpose of overcoming some of the deformity, and gives a flat surface on which the child can walk better. When ready to begin the redressment, cut out a wedge-shaped piece of plaster on the outer border of the foot over the most prominent part of the deformity, for here the greatest pressure is needed; then connect the upper and lower angles of this cut by cutting a line through the plaster entirely around the foot. Care should be taken not to allow this cut around the foot to be near enough to the heel to allow the front part of the foot to move in the dressing when the foot is twisted, for then the object in view would be defeated. The plaster cast is now in two pieces, each fixed to the foot. By grasping the leg with one hand and the foot with the other, it takes but little force with this leverage to bring the opposite ends of the wedge-shaped cut into apposition, which corrects a certain amount of the deformity. While an assistant holds the parts in a position of their new relation to one another, they are fixed there by a wet plaster bandage applied around the foot and ankle in a figure of eight, care being taken to fill in the gap made by the linear incision on the inner side of the foot. This third plaster bandage, being applied over the dry cast, can be easily peeled off at the next sitting; then make the wedge larger and repeat the dressing as before. This can be repeated three or four times, when it will become necessary to apply a new bandage. The number of sittings will have to be regulated by circumstances, pain, etc. The twisting should be done about three times a week, until the foot is in a normal position, then once a week until the desired overcorrection is obtained; then the permanent dressing is applied. The condition of varus should first be corrected, and then the equinus should be overcome by making the wedge incision over the dorsum of the foot, and proceeding as before. As a rule, it might be said that the foot should be kept in a prominent dressing for at least six months after the child begins to walk. After the dressing is left off a close watch should be kept on the patient, and just as soon as it is discovered that there is a tendency to relapse, the foot should at once be put up in plaster again, or, in whatever retentive apparatus may be selected. The author prefers either plaster or silicate of soda to the brace.

Hydrotherapy in Acute Infantile Gastro-Enteritis.—In the treatment of acute gastro-enteritis P. Adolpho (Gazz. Osped., Aug. 30, 1903) has found his greatest success in placing the entire alimentary tract in a condition of complete rest by withdrawing all food during a period of from twelve to thirty-six hours, and administering, during that time, nothing but boiled water—cooled and kept in a closed vessel—in large quantities, divided in frequent small doses. The effect of water thus given, he claims, is manifold; a detergent influence being exerted thereby upon the intestine, which is the site of digestive engorgement; the irritability of the mucosa being allayed and the great thirst which is present appeased. Moreover, water treated as described is a poor medium for the development of bacteria. The author states that all diarrheas of dietetic origin invariably yield to this line of treatment and that vomiting also promptly yields to its influence.

PHYSIOLOGY.

The Influence of Rennin upon the Digestion of Milk.—The discovery by Sternberg of the fact that the gastric juice of the infant contains much less rennin than that of the adult, led this investigator to maintain that, since the natural food of the infant is almost exclusively milk, the low rennin content in the gastric juice of infants would seem to indicate, that rennin does not materially promote the digestion of the milk proteids. As the result of a series of experiments performed in an attempt to verify the above conclusions, P. B. HAWK (Am. Jour. Physiol., Sept. 1, 1903) found that rennin inhibits the gastric digestion of milk proteids, but that rennin ash does not possess this inhibitory action. This effect of rennin upon the digestion of milk proteids is not modified by preliminary contact with pepsin solution at 40° C. for one-half hour. Paracasein is somewhat more difficult of digestion than casein. Rennin also retards the pancreatic digestion of milk proteids in alkaline or neutral solution, but has no inhibitory action upon the gastric digestion of fluid egg-albumin.

Respiration Experiments in Phloridzin Diabetes.—In a series of calorimetric investigations, A. R. MANDEL and G. LUSK (Am. Jour. Physiol., Sept. 1, 1903) sought to solve the question, does the diabetic burn more fat than the normal organism under similar dietary conditions, or does the increased proteid combustion supply the additional power necessary for his organism? They find that the calorific energy lost through the urine in the form of sugar is made up, not by increased combustion of fat, but by the rise in proteid metabolism. In a diabetic dog, whether he be fasting, or fed on meat alone, or on fat alone, or on meat and fat together, no more fat is burned than in the same dog when he is normal and fasting. After the injection of 5 gms. of phloridzin subcutaneously, as much as 60 per cent. of the phloridzin carbon may be eliminated in the urine. In the early stages of diabetes due to phloridzin, the carbon in the urine derived from oxybutyric acid or other abnormal products except sugar (and phloridzin itself), appears to be negligible.

Digestion Leucocytosis.—The exact nature of digestion leucocytosis and its true meaning have never been satisfactorily demonstrated, nor has the question whether the spleen plays any part been considered. In studying digestion leucocytosis in normal and in spleenless dogs, A. GOODALL, G. L. GULLAND, and D. N. PATON (Jour. of Physiol., Aug. 24, 1903) found that during digestion a slight preliminary fall in the total number of leucocytes in the circulation may occur. Differential counts show no constant corresponding alteration. A fairly regular rise in the total number of leucocytes then follows and reaches its maximum in about four hours after food. Digestion leucocytosis is not affected by removal of the spleen. The increase is due (*a*) to a lymphocytosis which is very constant as regards its incidence and its degree, and (*b*) in the majority of cases to a polymorphonuclear leucocytosis much more variable in its degree. The eosinophile cells show very little change. The number and varieties of white cells in corresponding mesenteric veins and arteries during digestion are similar, and resemble those in the general circulation. Pohl's conclusion that they are produced in the intestinal wall is thus negatived. The authors were unable to detect signs of increased activity of the lymphoid tissue of the intestinal wall, and this appears still further to oppose the conclusion of Hofmeister and Pohl.

The Effect of Lecithin on Growth.—In a series of experiments performed on white rats, S. HATAI (Am. Jour. Physiol., Sept. 1, 1903) found that the animals which received the lecithin by either injection or feeding, gain in body-weight more rapidly than those which did not receive it, the gain in the experimented rats being on an average 60 per cent. greater than in the controls; the relative weight of the central nervous system in the lecithin rats was normal; the nervous system in the experimented animals contains the same proportion of solids and water as in the centrals; this is another indication of the normal character of the growth. The area of the axis-cylinder to its sheath in the nerve fibers of the experimented rats is approximately the same as that in the centrals, showing that the peripheral nerves have also grown normally. The rats which received the lecithin show a greater power of resistance to the unfavorable changes in the surroundings. The author's investigation confirms strongly the previous observation of Danielewsky, Desgrey and Zaky, and others who claim the physiological effect of the lecithin to be that of a stimulating agent for normal growth.

Reflex Pupil-dilatation.—After section of the third nerve, according to H. K. ANDERSON (Jour. of Physiol., Aug. 24, 1903), dilatation of the pupil may be readily excited by tactile and pathic stimuli, but the dilatation ceases when the cervical sympathetic is cut also. No evidence has been obtained of efferent fibers to the iris except those in the third and sympathetic nerves. No constriction of the pupil was caused after section of the third nerve, either by variations of the light or other sensory stimulation. There was therefore no evidence of inhibition of the central sympathetic tone of the dilatator. After section of the third nerve rhythmical variation of the size of the pupil may occur (hippus). This may sometimes be excited by tactile stimulation of the skin around the eye or by increasing the dose of ether and chloroform. The rhythm ceases at once on section of the sympathetic nerve. After section of the spinal cord below the bulb stimulation of the central and of the sciatic nerve still causes slight pupil-dilatation, retraction of the nictitating membrane, and separation of the eyelids.

NEUROLOGY AND PSYCHIATRY.

Aphasia after Scarlet Fever.—Disturbances of speech are rather rare complications or consequences of scarlatina, and some authors fail to mention them at all. Statistics of such proportions as 6,000 cases of the disease in the St. Petersburg City Hospital; 3,000 cases in the Children's Hospital, and others do not contain a single case with such complications. The case reported by S. N. CHEREPIN (Prakt. Vrach, No. 34, 1903) was that of a little girl of five years in whom the attack of scarlatina was rather of a severe character, with distinctly pronounced typhoid symptoms. On the tenth day of the disease while perfectly conscious she lost the power of speech. Examination of the nervous system elicited paresis of the right arm and leg. She understood what was said to her and responded by various movements, opening her mouth, protruding the tongue, etc. She was entirely unable either to speak at will or repeat anything spoken to her, or produce any articulate sound. These disturbances lasted for a few days when they disappeared gradually. Patient began first to move her lips, and later produced articulate sounds, and on the seventeenth day the power of speech was restored in its entirety. This symptom complex of disturbed speech in combination with paresis points to an affection in the region of the left frontal convolution, in its posterior portion, the motor center of speech, and further in the direction of the internal capsule. The affection bears the character of cortical motor aphasia due likely to a more or less extensive hemorrhage or embolism, more probably the latter. On the other hand, it is possible to assume the whole clinical picture as one of motor subcortical affection.

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EXERCISE AND DETERIORATION IN TABES.

IN recent years tabes dorsalis or locomotor ataxia has become so frequent in this country as to demand that every general practitioner shall be able to recognize it early and shall know whatever is recent in medical knowledge as to its causation, its prevention, if possible, and of the measures of treatment advisable to keep it from progression too rapidly in its uncomfortable course. The most interesting contribution to the etiology of tabes in this country is the general conclusion among authorities on the subject that the negro is less liable to the disease than is the white. This has been used by some as an argument against the syphilitic origin of tabes, since, as is well known, the black race, in this country especially since the days of slavery, has been particularly subject to venereal diseases and has always suffered from syphilis in a larger proportion than the white population. The fact that tabes is actually less frequent among the negroes is brought out in an article by Dr. D'Orsay Hecht, in the October number of the *American Journal of the Medical Sciences.*

Professor Osler, in answer to a question in the matter, gives the statistics of Johns Hopkins Hospital. There have been 20 cases of tabes under observation during the last fourteen years while Johns Hopkins Hospital has been open. Of these only one was a full-blooded negro and one a mulatto. The average proportion of white and colored under treatment at the hospital is, as might be expected from the population of Baltimore, much higher than this. In Philadelphia, the rarity of tabes among negroes is very remarkable. In the nervous dispensary of the University of Pennsylvania not a single case of the disease has been seen in a negro for eight years. For more than fourteen years not a single negro suffering from the disease has applied for treatment at the infirmary for nervous disease. Dr. S. Weir Mitchell is credited with saying that he has seen altogether but four cases of tabes in the colored race and two of these were patients of mixed black and white blood. All the statistics show that even a small infusion of white blood seems to be enough to make the individual much more liable to tabes than if he were pure negro.

All of this with the well-known susceptibility of the negro to syphilis and the actual frequency of the disease might seem to argue against the etiological connection of syphilis and tabes.

There are considerations, however, that distinctly lessen the apparent force of this argument. Syphilitic affections generally of the nervous system occur among those particularly who have a bad family heredity and who are exposed to the emotional stresses and strains of an active competitive life. Probably the best prophylaxis against the development of nervous syphilis, especially where a family history of nervous conditions in near relatives argues for a distinct predisposition in this direction, is for the patient to take up a quiet easy-going life as far as possible removed from emotional strains. The social condition of the negro in this country has, as a rule, been such as to protect him from the bad effect of severe emotions on the nervous system as he has been very little liable to the serious disappointments of those in higher social stations.

It is generally recognized too, at the present time, that while syphilis is the most important predisposing factor in the development of tabes dorsalis it is not the only etiological element and usually needs the presence of some one or more direct causative agents. Exposure to extremes of cold and the encountering of severe fatigue seem to be particularly productive of tendencies to the degeneration of the nervous system characteristic of the disease. The negro race is very little prone to subject itself to the severe fatigue or to suffer the extremes of temperature that are so often found in the history of tabes dorsalis.

A very interesting commentary on the connection between overexertion and tabes is to be found in the opinions expressed by good authorities with regard to the reason for the paradox so often noted in the disease that if the optic nerve is atrophied early there is very little further degeneration of tabetic character. Edinger called attention to the fact that changes not unlike those known in the cord as tabetic might be produced in animals by tempting them to overexertion. Mice were placed in a position in a revolving cage that required them to exert themselves constantly for several days. The result was a series of quasitabetic changes in their spinal cords. Applying the principle thus discovered to the fact that the blind patients do not suffer from further progress of their tabetic degeneration Edinger considered that it was probably due to the fact that in their blind condition they were not able to use, and especially not in a position to abuse, their muscular and nervous strength.

The lesson of the discussion consists in the advisability of warning patients who show the initial symptoms of tabes, especially so long as the disease has the slightest tendency to progress that they must be extremely careful with regard to the amount of exertion they permit themselves to undergo. It would even seem doubtful whether they should be encouraged to go around much on their feet at all. Of course, after a time, tabes enters upon a period of inactivity, then a certain amount of exertion may be allowed until the first warning symptoms of further progress. The main part of the treatment of the disease, however, evidently must consist in early bringing home to patients' minds the necessity for a life as quiet as it is possible to make it and without any of the ambitions that up to that time have constituted the main objects of their thoughts and their aims in life. It is indeed a difficult remedy. But the sooner the lesson is learned the better for the patient and the more satisfaction will the physician have in the consciousness of having prevented further progress of the disease.

CHOLECYSTITIS.

The surgery of the biliary tract is at present the center of the liveliest interest in surgical circles all over the world. At the same time infectious diseases of the gall-bladder and ducts are now attaining the same prominence in medical circles that their surgical affections have reached for the surgeon. Cholecystitis is at the present moment the most interesting disease that physicians generally have under consideration. There seems no reason to doubt that in the next few years it will occupy a position in the minds of even the general practitioners almost as prominent as that of appendicitis. There are many similarities between the two diseases and it is probable that their history would develop in a corresponding way. The gall-bladder occupies for the upper right quadrant of the abdomen a position very similar as regards pathology, symptomatology and possible fatal complications that the appendix does for the lower right quadrant. It is very curious to realize that for both these organs notwithstanding innumerable autopsies during the past century, there was a total neglect to recognize the pathological significance of infectious processes arising within them and spreading to other organs with fatal results.

Dr. Musser, in his discussion of acute and chronic cholecystitis, before the New York State Medical Association (see proceedings of the meeting in this week's Medical News, p. 908), called attention especially to this parallelism of symptomatology between acute cholecystitis and appendicitis. He expressed the opinion, now very commonly held, that cholecystitis is about to prove to be a much more common disease than has been suspected. As was formerly the case with appendicitis, it has been masquerading under the guise of other affections. Gall-stones particularly have often been assumed to exist when the condition was really an acute inflammation of the gall-bladder and of its ducts, though the occurrence of true gall-stone colic later on in the course of the affection seemed to confirm the truth of the early diagnosis. As a matter of fact, however, gall-stones are usually secondary to an infection of the gall-bladder, as has been demonstrated by many observers in recent years and the deposition of the salts of bile in the form of these concretions is really a protective effort on nature's part against infectious material. In the center of gall-stones there is practically always found a mass of bacteria—the remains of the previous infection.

As the result of the study of appendicitis in recent years, the so-called idiopathic peritonitis, or peritonitis supposed to be due to cold and other indefinite causes has become very much more limited in its frequency than has been hitherto the case. The similar limitation seems sure to follow a more accurate study of catarrhal jaundice. It has been assumed that in most cases in which jaundice occurs without preceding biliary colic the stoppage of bile is due to a simple inflamma-

tory swelling of the gall-ducts. The more carefully observations are made, however, and the more opportunities are afforded for the direct study of the condition by early surgical intervention the more clear does it become that the affection is really a true cholecystitis extending at times also to the gall-ducts and due to the presence of some infectious agent in the biliary tract. It seems not unlikely that the name catarrhal jaundice will eventually be as satisfactorily eliminated from medical literature as is at the present time the term idiopathic peritonitis.

Acute cholecystitis occurs most frequently in some etiological relation with the typhoid bacillus. A true cholecystitis may usher in an attack of typhoid fever and for a time mask the symptoms of the underlying general infection. On the other hand acute cholecystitis may follow typhoid fever and such a sequence, in the opinion of good authorities, is much more frequent than has been thought. Dr. Musser did not hesitate to say that in many reported cases of supposed relapses of typhoid fever the patient is really suffering from cholecystitic sequelæ of typhoid fever. In these cases the temperature is often reported as running an anomalous course and not following that characteristic of typhoid fever. There is an evening rise of temperature with a morning remission that amounts almost to an intermission so that the temperature curve of many supposed typhoid relapses resembles that of true septic fever. The presence of tenderness and pain over the gall-bladder shows the condition to be a posttyphoid cholecystitis.

Unfortunately for cholecystitis as for appendicitis, a fatal termination coming without much warning, is not very unusual. Gangrenous types of cholecystitis rapidly lead to perforation followed by peritonitis and death. In these cases of gangrene of the gall-bladder, there is likely to be a remission of symptoms just as the gangrene sets in, which is very delusive. The physician may consider that his patient is actually improving when the hopeless stage of the disease has become a reality. As has been our experience with appendicitis, it is evident that a more intimate knowledge of its early conditions will result in a greatly diminished mortality from cholecystitis. Early operations, while not as necessary as in appendicitis, are often absolutely required in order to save life. The affection cannot be considered a strictly medical disease when in severe form but is rather of the mixed type, which demands the presence of a surgeon in consultation and the armed expectancy that has been found so satisfactory against appendicitis in recent years. It is interesting to realize that much of the advance in this subject has come from American physicians and surgeons, as is also true in appendicitis and that in the near future much more may be looked for from the same source.

THE RESUSCITATION OF THE HEART.

It has ever been an ambition of the physiologist to start up a once stilled heart. With each succeeding generation of laboratory investigators the mysteries of the mechanical features of the heart beat have been probed with increasing depth and more and more of the principles have been reached and given over to experimental investigation.

To be able to compel the cardiac mechanism to go through its cycle after many hours and even days of apparent quiescence has been the fortune of Dr. A. Kuliabko, who may be said to have inaugurated a new epoch in heart physiology. He has been able to restore the heart action forty-four hours after ordinary death.

This author maintains that it is necessary to attribute to mammalian tissues a greater vitality and a greater ability to survival after somatic death than earlier investigations have seemed to indicate. In continuing his researches in this field, Kuliabko obtained certain surprising results (*Pflüger's Archiv*, July 24, 1903). He succeeded in arousing spontaneous pulsations in the freshly cut-out hearts of rabbits and birds, in some instances at least in certain regions of the heart, not only two days after the animal's death, but as much as three, four and even five days. In connection with these experiments he confirmed the observation of Engelmann that, whereas the different parts of the heart act synchronously, yet each part dies separately. The portions of the heart he has found cease beating in the following order: Left ventricle, right ventricle, auricles and mouths of the venæ cavæ. Recovery of pulsation takes place in the reverse order.

He has obtained rhythmical contractions of portions of the heart of a rabbit five days after its death from disease, these contractions being aroused by the circulation through the heart of Locke's solution. In the case of a guinea-pig that had died of enteritis the heart gave evidences of vitality seven days after the animal's death, all of which tends to show that in spite of the ravages of disease, the heart muscle still preserves a cer-

tain supply of energy after death. The more time that has elapsed after the death of the animal, the longer it takes to evoke signs of cardiac action by means of an artificial circulation. The presence of coagula in the heart and in the coronary vessels does not appear to interfere with the restoration of cardiac activity.

The interest of physicians rests mainly upon the practical application of these experiments, in which the author sought to arouse the activity of the human heart. It is needless to state that other investigators have succeeded in doing this in the case of hearts removed from individuals executed by hanging or beheading, but these hearts had been removed from the bodies immediately after death. Kuliabko confined his experiments to cases that had died in the hospital from various causes, in which some time after death the heart was removed, placed on ice and taken to the laboratory. The hearts were principally those of children.

The first successful result was one in which the author obtained pulsations in the heart of a child who had died twenty hours before from a double pneumonia, and in which these pulsations were kept up for one hour.

The ease of cardiac resuscitation he has found depends greatly upon the nature of the disease from which the individual has died. Thus positive results of varying degree in the hearts removed from fatal cases of pneumonia, cholera infantum, pneumonia combined with diphtheritic ophthalmia and septicemia, bronchitis combined with peritonitis and meningitis, pneumonia complicated with gastro-intestinal catarrh, and double pneumonia complicated with intestinal catarrh have been obtained. Three cases, left pleurisy with effusion, diphtheria complicated with septicemia and erysipelas gave negative results, which was not due to delay in removing the heart after death.

The nature of the disease also influences the rapidity of onset of rigor mortis in the cardiac muscle, the following rule being apparently maintained, namely, the earlier and the more vigorously cardiac rigor sets in, the less is the cardiac pulsation capable of being revived. But this rule is subject to marked exceptions. It is furthermore to be borne in mind that the rigidity of death is no absolute hindrance to the restitution of the automatic activity of the mammalian heart.

In one of the cases in which the heart had passed into marked rigor, the author was able, by means of the artificial circulation, to reestablish the pulsation of all parts of the heart. He also found that washing out the cardiac vessels with Locke's solution delays or even prevents the onset of rigor. The latter phenomenon is no longer regarded as an index of the total dissolution of the muscular tissue and the irretrievable loss of all its functional properties.

These researches have an extraordinary interest, in that they furnish proof of the wonderful vitality of the heart. It would appear that the cessation of the heart-beat in certain cases of natural death is not the result of an exhaustion of this organ, but is apparently the sequence of the heaping-up in the muscle of the heart, which has also been affected by pathological processes, of the products of metabolism. By removing these products by means of an artificial circulation of Locke's solution, it is possible to reestablish the automatic activity of the heart for a long time.

One is cautioned against concluding, on the basis of these experiments, that it is possible to bring the dead back to life, for this depends upon the resuscitation not only of the heart but also of the other tissues and organs, principally of the central nervous system. As regards the last, it has been proved that the suspension of the circulation in the brain results in almost immediate change in the reaction of the gray-matter, which changes from a neutral or alkaline to an acid reaction. Yet Herzen has succeeded in restoring the suspended cerebral functions in rabbits by means of a renewal of the circulation of the brain. A thorough overhauling of the entire subject of the ability of the various tissues to survive somatic death, is necessary before one can even consider the possibility of starting anew the entire living machinery.

ECHOES AND NEWS.

NEW YORK.

Clinical Lectures in Dermatology.—The governors of the New York Skin and Cancer Hospital announce a course of clinical lectures to be given each Wednesday afternoon at 4:15 o'clock during the winter. These clinics will be conducted by Dr. L. Duncan Bulkley in the out-patients' hall and will be free to the medical profession.

The Craig Colony Prize.—A prize of $200 is offered by Dr. Frederick Peterson for the best original essay on the etiology, pathology and treatment of epilepsy. The award will be made by a committee of the New York Neurological Society and the result announced at the annual meeting of the Managers of the Colony the second Tuesday in October, 1904. The conditions to be complied with are: (1) The paper must show original research work. (2) The subject matter of the essay shall not have been previously published. (3) The manuscript submitted shall be in English and be sent to Dr. Peterson at

4 West Fiftieth street, New York City, before September 30, 1904. The successful manuscript becomes exclusive property of the Craig Colony. (4) Each paper submitted must be accompanied by a sealed envelope containing the name and address of the author and bearing on the inside a motto or device which is also to be inscribed upon the essay.

New York State Civil Service Commission.—Examinations for Superintendent and for Resident Physician in the New York State Hospital for the treatment of Incipient Pulmonary Tuberculosis.—The State Civil Service Commission will hold open competitive examinations for the above mentioned positions, November 28, 1903, in various cities throughout the State. Intending competitors must fill out application blanks and file them in the office of the Commission before noon of November 23. Applicants will be duly notified of the time and place of examination. Non-residents of the State will be admitted. The requirements and conditions of examination are as follows:

The Medical Superintendent will probably receive a salary of $3,500 a year with quarters and maintenance for the superintendent and his family. The duties of the position are defined by Chapter 416 of the Laws of 1900, which further provides that such medical superintendent shall be a well-educated physician, a graduate of a legally chartered medical college, who has had at least six years actual experience in the practice of medicine, including at least one year's experience in a general hospital. Subjects of examination and relative weights: Experience, education and personal qualifications, 4; written examination covering general medicine; hospital administration; pathology, bacteriology and therapeutics of pulmonary tuberculosis, including dietetics and sanatorium treatment, 3; practical examinations of patients for diseases of the chest, 3. The written examination will be held in any of the cities named on the application on November 28. The practical test will be held at a later date and place (probably Albany), of which candidates successful in the experience and written examinations will be duly notified.

The Resident Physician's salary probably will range from $900 to $1,500 a year with quarters and maintenance. Duties to be prescribed by the medical superintendent under the direction of the Board of Trustees. Candidates must be regularly graduated physicians and have at least two years' experience in the practice of medicine, including one year's actual experience in a general hospital. Subjects of examination and relative weights: Written examination covering anatomy, physiology, materia medica and therapeutics, chemistry, theory and practice, surgery; also a special examination in pathology of pulmonary tuberculosis, in bacteriology and descriptive laboratory methods, 6; practical examination in the physical diagnosis of diseases of the chest, in the examination of sputa, blood, urine, and other pathological material, 4. The written examination will be held in any of the cities named on the application on November 28. The practical test will be held at a later date and place (probably Albany), of which candidates successful in the written examination will be duly notified.

PHILADELPHIA.

Medico-Chirurgical College.—Dr. Judson Daland has been elected Professor of Clinical Medicine at this institution.

Next Meeting of Medical Examining Board.—The next meeting of the Medical Examining Board representing the Medical Society of the State of Pennsylvania will be held in Philadelphia, Industrial Hall, North Broad street, on Tuesday, December 15, 1903, at 2 P.M., and will continue on the three succeeding days.

Allegheny City Will Not be Quarantined.—The clash between the officials of the State Board of Health and the local Health Board in Allegheny City has been adjusted so that general quarantine of the city will not be ordered. It now appears that City Councils upheld the local officials in their partial disregard of measures to prevent the spread of smallpox. When convinced of the superior authority of the State Board they decided to abide by its rules and to make regular reports in the future. Postal authorities and express companies have been notified of the conditions now prevailing in the city.

Pennsylvania Institution for the Deaf and Dumb.—The annual meeting for the election of directors of this institution was held October 28. The report of the Superintendent showed that during the past year 64 pupils were admitted and 59 graduated. The present attendance is 507, said to be the largest number at any similar institution in the world. The erection of a new gymnasium is recommended.

Pennsylvania Hospital.—A tablet to the memory of Stephen Girard and his wife was recently placed in the hospital by the board of directors of City Trusts. It was placed on the south wall of the entrance hall to the hospital and was given in recognition of Girard's bounty to the hospital. It also commemorates his wife, who for more than twenty-five years was an inmate of the insane department and who was buried on the hospital grounds.

Eastern Penitentiary Recommendations.—Following the dismissal of Warden Bussinger of the Eastern Penitentiary in this city comes the report of the grand jury which, after two visits of inspection condemns strongly the existing conditions at the institution and makes many suggestions for improving them. The report includes the following: "First. The accomplishing of a complete and thorough disinfection of the entire plant, it having been found by expert bacteriological tests employed by the inspectors that it is probable that every cell in the institution is infected with germs of tuberculous disease, it being a fact of record that over 60 per cent. of the deaths which have occurred in the penitentiary in the last thirty years have been from this variety of disease. Second. The complete reconstruction of the plumbing system throughout the entire premises. As it is at present, it is hopelessly unsanitary, and must be depressing to the convict's ability to resist the invasion of disease. In the opinion of the jury, nothing short of an entire replacement of the plumbing system would meet the requirements. A system of modern baths should be introduced, the baths at present in use are antiquated, unsanitary and undoubtedly a fruitful source of contagion and disease. In the opinion of the jury, the State should establish and support an institution for the exclusive incarceration and treatment of insane criminals, the penitentiary being totally lacking in proper facilities for the care of criminals of this class. Pennsylvania is sadly behind her neighboring states in this important modern demand. Recognizing the excellence of the system already adopted at the Philadelphia Hospital for the Care of Consumptives we would recommend that similar provisions be made at this institution."

The American Society of Clinical Surgery.—This Society, after meeting in Baltimore on November 13, will come to Philadelphia on November 14 and hold

sessions as follows: 10 A.M., Medical Hall, University of Pennsylvania, where Dr. G. G. Davis will speak on the Teaching of Applied Anatomy. At 11 A.M., in the amphitheater of the University Hospital, Dr. Edward Martin will demonstrate the Effect of Head Positions upon the Epiglottis during Anesthetization, a Mechanical Intestinal Suture, and Percussion and Auscultation in the Diagnosis of Fractures. At noon, Dr. C. H. Frazier will demonstrate Results of Division of the Sensory Root of the Gasserian Ganglion, and Observations upon the Technic of Intracranial Operations. At 2:30 P.M., at the Pennsylvania Hospital, Dr. J. Chalmers Da Costa will speak on Traumatic Hemorrhage from the Lung, Dr. R. G. LeConte on a subject not as yet selected, and Dr. J. H. Gibbon on Diagnosis and Treatment of Perforating Gastric Ulcer.

Hypnotism in the Treatment of Stammering Children.—At the meeting of the Philadelphia County Medical Society held October 28, Dr. G. Hudson Makuen demonstrated on a boy of fourteen years a method which he has used in a number of cases of stammering. The method is simply that of hynotizing the child and then telling him to speak. In many instances this will be done quite readily though it was impossible to obtain speech before. The principle on which the treatment is based is that these children can really talk and will talk if they can be made to believe that speech is possible. They cannot be made to believe this when awake. When hypnotized they will readily believe anything that is told to them and can then be taught to speak. Dr. Makuen stated that in certain selected cases this expedient is undoubtedly a valuable aid and that if hypnotism has any practical value in any class of cases it seems to find its application in the one under consideration. He has employed it in twenty cases with very satisfactory results.

The Importance of the Early Recognition of Deformities.—By invitation, Dr. Reginald H. Sayre, of New York, delivered an address on the above subject and showed a large number of illustrative lantern slides. The speaker said that the old adage of prevention being better than cure was most true in the realm of orthopedics. The Chinese, by the use of patience, care and a bandage produce the most marked deformities in the feet of their children. Why not use the same amount of intelligent attention in the care of existing deformities in infants and change them into natural shapes? If the art of prevention were better understood the unsightly deformities now seen in older persons would not be presented for treatment. In the palsies of children, care should be taken to prevent consequent deformity of bones. The parts should be held in position and kept straight instead of letting them go and doing osteotomies later on. The same is true of spinal curvature. The twentieth century is to be noted for its advance in preventive medicine and Dr. Sayre hopes that it will see an advance in preventive surgery as well. When a mother brings her child to the physician and says there is something wrong with it, the physician must exercise the greatest care before deciding on the case. He should see the child when stripped, and when it has recovered from its fright at the strange surroundings. Under these circumstances he may readily discover a lesion that had at first escaped his notice. Points that call attention to some departure from the normal are elevation of one hip, greater space between the arms and body on one side, the position and prominence of the scapulæ, the distance of the nipples from the umbilicus, the prominence of one nipple, etc. An incipient Pott's disease needs immobilization; lateral curvature due to some other cause, calls for systematic movements. Dr. Sayre says that it is not always absolutely easy to differentiate between these two conditions in their early stages when the diagnosis is of such great importance. In cases of hip-joint disease, pain in the toe is sometimes the first intimation of the affection. Spasm of the muscles of the calf on the same side is an early sign that is often overlooked by the careless physician. If pain in the hip is waited for as a diagnostic sign, then the diagnosis will be made late. The muscular spasm limits motion and prevents pain.

In the discussion, Dr. DeForest Willard said that the experienced physician and the surgeon, as well as the general practitioner, sinned in these cases by not making an early diagnosis. This is due not so much to lack of knowledge as to carelessness. Many patients are not stripped and the condition from which they seek relief is treated as something else, often as rheumatism for example. The fact should be emphasized that rheumatism in a single joint in children is absolutely unknown, unless there be other manifest evidence of that disease.

Dr. Oscar H. Allis said that the importance of stripping the patient had been emphasized by the previous speakers, but it could not be too often mentioned as it was so often neglected or considered unnecessary. Candidates for the United States Army and Navy are stripped absolutely naked and private patients are entitled to the same consideration. He referred to the great etiological importance in lateral curvature of the spine of children sitting in a certain position in school. If he had the power, he would make every child in school use his right hand on Monday, the left on Tuesday, and thus alternate through the week until Saturday and Sunday when the child could use either hand it chose. Teachers are beginning this expedient to some extent but it should be universally enforced. Dr. Allis stated that a perfectly symmetrical spine is never seen in an educated person.

New System of Medical Inspection.—The reorganization of the entire system of medical inspection of Philadelphia as advocated by Director Martin has been approved by committees of Councils and the necessary appropriation endorsed. Dr. Martin's purpose is to place at the head of each of the 50 districts into which the city is to be divided a competent medical inspector, with a salary sufficient to pay him for his full time, who is to be held responsible for the condition of his district. In his hands are to be placed the duties now divided among the vaccine physicians, district physicians and medical inspectors. In place of 36 vaccine physicians, who give a portion of their time, 50 district physicians who attend the sick poor, and of 13 medical inspectors of contagious diseases, these 50 medical inspectors will be responsible for vaccination, treatment of the sick poor and contagious diseases. In addition to this corps of inspectors there is to be organized a corps of 20 visiting nurses, always ready to receive the department's assignments to homes where their services are urgently needed, but where circumstances would preclude the aid of hired trained nurses. These nurses will at other times be employed in visiting public schools to look after the welfare of pupils. A further step will be the organization of a corps of 12 meat and cattle inspectors to perform the duties now attempted by three inspectors. The trio of inspectors now at work are under the Department of Public Safety. Both Director Martin and Director Smyth agree that this

small force cannot carry out the purpose of its existence satisfactorily, and Director Smyth has approved the plan to have the inspection of meat and cattle transferred to Dr. Martin's department. The number of assistant inspectors of milk is likewise to be increased from four to eight. In pointing out the improved service which will be given under the proposed consolidation and reorganization, Director Martin called attention to the fact that the cost will not be much greater than it now is, with divided and to some extent irresponsible forces. The suggested salary for the medical inspectors was $1,200 each, of the visiting nurses $750 each, the meat inspectors $1,000 each, and the inspectors of milk $1,020 each, including car fare. Homeopathic physicians, in numbers corresponding to their proportion in the city, will be appointed on the new staff of inspectors.

CHICAGO.

Diphtheria Increasing.—This disease continues to increase, 106 cases being reported, compared with 89 during the previous week. The northwest section of the city is most affected, but reports come from all parts of the city. Scarlet fever, measles and whooping cough are at a minimum.

Pneumonia.—The Health Department, in its bulletin of Oct. 24, calls attention to the fact that the community is again facing the beginning of the murderous pneumonia season. Between the last of this month and the close of next May upward of 2,100 persons will die of pneumonia in Chicago, while from consumption, which is practically monopolizing the attention and efforts of the laborers in the field of preventive medicines, there will hardly be more than 1,300 deaths during the same period. Since the beginning of the last great pandemic of influenza, in 1889, there have been 33,861 deaths from pneumonia in this city and 29,980 from consumption—an excess of 11.4 per cent. of pneumonia mortality. During this period, that is, the last thirteen years, 1890-1902, the deaths from pneumonia have increased from an average of 117 in the 100,000 of population during the previous thirteen years, 1877-1889, to 179—an increase of nearly 53 per cent. Corresponding figures for consumption are 171 per 100,000 in the first period, and 160 in the second—a decrease of a little more than six per cent.

To Aid Sick Children.—At a meeting of the Children's Hospital Committee it was announced that arrangements had been completed making it possible for any parent of a sick child, or for any physician, to ascertain at any time what accommodations could be secured for children at any hospital in the city. The society intends from this time on to maintain an information bureau of this character at its headquarters. Hospitals will report to the bureau every day, filing full information concerning the number and location of beds available for children, and physicians who make a specialty of treating the diseases of children will also report to the bureau, so that they may be reached at any hour of the day or night. All information on these subjects will be supplied to the general public on application in person or by telephone. It was also announced at the meeting that the accommodations at the Crippled Children's Home had been increased by sixty additional cots through the efforts of the society.

Septic Endocarditis.—At a meeting of the Chicago Medical Society, held Oct. 21, Dr. R. S. Dubs read a paper on this subject, and presented microscopical and macroscopical pathologic specimens of the case, which was of great interest, because of a complete history from the patient's first sickness to his death. Patient's mother had been afflicted with rheumatism for ten years or more. Patient himself, a man of thirty years, had enjoyed the best of health previous to his first attack of rheumatism in the fall of 1902. During this sickness, which yielded fairly well to the salicylates combined with the alkaline treatment, there was a slight systolic bruit at the apex, noticed only now and then. In the winter of 1903 he had a second attack of rheumatism, subacute in character, and lasting several months. As in the former attack, the slight bruit was again noticed at times. In March, patient went to Mount Clemens, and came back apparently cured. While there he injured his left elbow, and had an open discharging wound for several weeks. The wound did not heal until he had been back in Chicago for several weeks. In the beginning of May, 1903, he was taken with chills and fever. For two weeks his sickness gave a picture of a sepsis. Nothing pointing to a more definite location of the sickness than the systolic bruit heard at the apex of the heart. The absence of malarial plasmodia and the failure of quinine excluded malaria. The irregular pyrexia with rigors, the polynuclear leucocytosis, made a sepsis very probable. The first embolic process was noticed in the third week, in that pus and blood were found in the urine after a chill. This, in connection with the systolic bruit at the apex, fairly well established the diagnosis of septic endocarditis. As the sickness advanced, dilatation of the heart became more noticeable. On the twenty-fifth day, during a severe chill, the right anterior valve of the aorta was ruptured. The sudden incompensation thrust upon the heart gave rise to most distressing symptoms. On the thirty-first day of the sickness a pericarditis was ushered in under symptoms of great cardiac distress and collapse. The dilatation of the heart was extreme, and the post mortem showed that it extended from the right mammillary line to the left side of the thorax. The microscopical examination showed the presence of streptococci in the varicosities of the aortic valve, also beginning organization of their fibrinous manes. The interesting features of the case were, first, that we have a lesion of the aortic valves only, whereas the systolic bruit was heard at the apex alone for many weeks and was always loudest there. Second, that the aortic valves alone were affected, no other valves being embraced in the ulcerative process. Third, the clinical picture would seem to show a marked difference between a rheumatic endocarditis and a septic endocarditis. If, as has been presented, the septic infection of the valves was subsequent to the diseased condition caused by the rheumatism, we would consider the bacteria as having found entrance through the open wound of the left elbow. If, however, it be taken for granted that the cause of the heart trouble was due to the streptococci found in the post-mortem examination, from the time the first systolic bruit was heard, in the fall of 1902, it would be difficult to explain the joint symptoms in any other way than that they were caused by these same streptococci. That these joint lesions caused by streptococci should be affected by the salicylates is contrary to clinical evidence. This would seem to establish the fact that in this case the endocarditis during the attacks of the rheumatism was due to another agency than the streptococci found upon the valves in the post-mortem examination.

Can an Ophthalmic Examination Aid the Life Insurance Examiner in his Work?—Dr. George F. Suker read a paper on this subject before the October meeting of the Medical Examiners' Association. It was a potent fact that none of the present day

life insurance companies ever demanded even a cursory examination of the eye. Only one question in reference to the eyes was ever asked, namely, How is your sight? And no pretense was even made to verify the veracity of the answers given by the applicant. It mattered not whether the answers given corresponded to the actual anatomicopathological condition of the eye or not. So long as the applicant claimed to have so-called normal vision, and met with other lax requirements, he was accepted as a good risk by every company. Nevertheless, this very applicant might present some latent ocular lesion, which, if it had been recognized, would have rendered his acceptance very doubtful, as the eye symptom was but a local expression of a serious systemic dyscrasia. The insurance companies did not appreciate the tangible clues to be derived from an ophthalmologic examination, because the very heads of their medical department, who, with strict propriety and dignity, one could safely designate as belonging to the old school of medicine, were themselves incapable of valuing such an examination as it ought to be. In a large measure, this deficiency was due to the lamentable fact that in many schools, and not so very long ago, ophthalmology was a sadly neglected study, both on part of the teacher and the student. This defect, however, was rapidly being corrected in the schools, and now the department heads could not plead ignorance as to the true value of an ophthalmic examination and its scope of applicability in insurance examinations. In insurance work, the examiner must diagnosticate the applicant, and then prognosticate for the company as to the life expectancy of applicants. The examiner should avail himself of all methods of examination and precision. The company should accord him this extra latitude of examination, and allow him an appropriate compensation. Especially should he be permitted this freedom in all dubious cases, as it was certainly an additional safeguard to the company in many instances. On the other hand, this additional precaution might not be of profit to the agent, should an apparently acceptable applicant be turned down, because the eye examination distinctly proved him an undesirable risk. Frequently all physical and laboratory examinations were apparently negative, yet an ophthalmic examination would reveal conditions which no company could countenance in an applicant. No insurance company would knowingly issue a policy to a syphilitic or one with even a trace of albumin (serum or nuclear), or sugar, be it functional, organic, temporary, or permanent. Nor would this same company issue a policy to any person with valvular heart lesions or incipient serious cardiovascular changes; yet this very company would accept men, who, for example, were decided apoplectics or incipient tabetics, with reduced life expectancy, would escape detection save for an eye examination. If the companies would be more scientifically elastic with the urinary data and place some credence in this regard in ocular findings, many an injustice toward the prospective policy-holder would be obviated. The author pointed out in what particular cases an eye examination would prove of value.

CANADA.

Improvements to a Winnipeg Hospital.—Sister Superior Hemel of the Grey Nuns at Montreal has approved of plans for a four-story addition to St. Boniface Hospital, Winnipeg.

New Dean of Queen's Medical Faculty Appointed.—Dr. J. C. Connell, M.A., of Kingston, has been appointed Dean of the Medical Faculty of Queen's University in succession to the late Dr. Fife Fowler.

Consumption Sanitarium for British Columbia.—The Ministerial Association of Vancouver, B. C., has entered upon a project which has for its purpose the establishing of a consumption sanitarium in that province. Toward this end a provincial association will be at once formed.

Controlling Infectious Diseases in British Columbia.—The department of public health in the province of British Columbia has issued leaflets containing information on the common infectious diseases. These are for distribution among the school children of the province and the object is to make the parent more familiar with these diseases. The system will provide for a daily report from the teachers regarding pupils absent through illness. In this way the health authorities hope to control epidemics in their initial stage.

Toronto Dispensary.—According to the annual report of the Board of the Toronto Dispensary there were 13,000 of the sick poor of Toronto treated in this institution during the past official year. The work carried on at this institution has far outgrown the present accommodation; and a movement is on foot to erect new and more modern buildings. Already several donations have been received toward this end.

The Spitting Nuisance in Montreal.—Dr. Laberge, Medical Health Officer of Montreal, reports that for some time past his department has been conducting an active campaign to prevent the practice of persons spitting in churches, theaters, halls, etc. Ministers and priests of congregations have promised to publicly ask their congregations to do all in their power to abate the unpleasant custom. Many petitions have been sent in to the Health Department asking that everything be done to suppress the filthy practice.

Olympic Games.—Dr. Tait McKenzie of the anatomical department of the medical faculty of McGill University, Montreal, has been appointed chairman of the Canadian Committee for the St. Louis World's Fair Olympic Games.

Resignation.—Dr. William Bayard, of St. John, N. B., one of the oldest medical men in Canada, has handed in his resignation as chairman of the New Brunswick Board of Health. For more than forty years Dr. Bayard was a member of this Board of Health. It is understood the cause of the resignation to have been differences arising with the secretary of the Board over certain smallpox cases in New Brunswick.

Hospital Superintendents.—Dr. Charles O'Reilly, medical superintendent of the Toronto General Hospital, attended the annual meeting held recently at Cincinnati of the Association of Medical Superintendents of Hospitals of the United States and Canada, of which he is vice-president. When Dr. O'Reilly and the other Canadian delegates came into the meeting they had the extreme gratification of hearing the orchestra play "God Save the King," as a compliment to their British guests.

Queen's Medical Jubilee.—The Medical Faculty of Queen's University, Kingston, Ontario, celebrated their jubilee on Oct. 15 and 16. The occasion was also noteworthy as the time of the installation ceremonies of the new principal of the University. Among the old graduates of Queen's who were present to be honored by the degree of LL.D., were Dr. H. H. Chown, Dean of the Medical Faculty of Manitoba University, Winnipeg, and Dr. Vincent N. Moore, Brockville, Ont., representative of Queen's on the Ontario Medical Council. Sir William Hingston, Montreal, Dean of the Medical

Faculty of Laval University, was also a recipient of his honor.

New Western Hospital for Montreal.—At the regular quarterly meeting of the Board of Governors of the Western General Hospital of Montreal, held last week, it was announced that a new hospital would probably be erected in the spring, and that it would provide accommodation for at least 100 patients. The building would cost in the neighborhood of $100,000. The report of the medical secretary was read and it showed that during the past quarter 146 patients had been received into the wards, while in the outdoor departments there had been 1,941 consultations.

GENERAL.

King Edward VII. Sanatorium.—On Tuesday last the foundation stone of King Edward's Sanatorium for tuberculous patients in England was laid at Lord's Common, Midhurst in Sussex. This is the site selected for this million-dollar sanatorium, made possible by the endowment from Sir Ernest Cassel, and is about 65 miles from Waterloo Station. The King made a brief speech. He said he had decided to expend the amount of the donation in the erection of an open-air establishment, in the hope of arresting the malady and advancing knowledge on a matter of such infinite importance. Fresh air and sunshine were necessary, and the sanatorium would provide all the accommodation necessary for people of slender means.

A Layman's Interest in Anatomy.—It is related that Dr. Nuhn, the professor of anatomy, at Heidelberg, was much surprised one day when a banker, usually haughty and unsociable, came and sat with him in a railway car, and, after a pleasant chat, asked him all sorts of questions, especially about the anatomy of the heart. The next day he even called, by permission, in the medical department, and watched the professor dissecting one of those organs. Then he drove home, and a few hours later it became known that he had committed suicide by skilfully plunging a dagger into his heart.

Belladonna Poisoning in a Hospital.—The State Board of Charities and the hospital authorities have not yet found a satisfactory explanation of the accidental poisoning with belladonna of 11 inmates of the State Hospital at Tewksbury, Tuesday night, October 27. Dr. Irish, who is a member of the medical staff of the hospital, says that of the 50 men in the ward only 11 were receiving medicine, and only these 11 were poisoned. He has been able to learn of no motive on the part of any of the patients that would lead to the poisoning, and admits that the case is a mysterious one. The patients who received the poison are reported as showing continued improvement.

Meeting of the American Public Health Association.—At the thirty-first annual meeting of the American Public Health Association, held at Washington, D. C., last week, Gen. George M. Sternberg, Surgeon General, United States Army, retired, delivered an address in which he said the great prosperity of some of the Southern States during recent years had been due to their protection from yellow fever, which formerly operated as a serious barrier to industrial and commercial progress. Dr. D. E. Salmon of the Bureau of Animal Industry, Washington, said clinical evidence, statistics, and experiments all favored the conclusion that bovine tuberculosis was a factor in human tuberculosis. The fact that 25 per cent. of the cases in children investigated by the German commission and 50 per cent. of similar cases investigated by de Schweinitz of Washington showed animal infection was sufficient to prove the necessity for measures to be taken to guard against infection of children through milk. Dr. John Guiteras of Havana, said that although in Cuba the invariable custom was to boil milk, he believed tuberculosis in Cuban children was as frequent as anywhere else.

Car Sanitation.—The Committee on Car Sanitation of the American Public Health Association, reported through Dr. J. N. Hurty of Indianapolis. The railway car, he declared, was a potent factor in the transmission of consumption. The consensus of opinion was that the air in sleeping cars became vitiated and was a fruitful source of disease. Dr. J. H. McCormick of the State Board of Health of Kentucky declared that an official investigation into the subject made by him disclosed the fact that the blankets were cleaned only once every six months. Dr. C. B. Dudley of Altoona, Pa., chemist for the Pennsylvania Railroad Company, demanded that the delegates furnish him the data on which they based their statements. The cleaning of cars in transit he characterized as one of the most annoying things railroads had to contend with. He said his company had tried various schemes for sterilizing the drinking water in cars, and had resorted to formaldehyde in disinfecting them. He assured the delegates that the railroads were ready to utilize any practical system that would contribute to the general public health. He admitted that the Pullman car was "still in the dark ages," and that railroad men did not know how to properly ventilate a sleeping car.

Ethics of Professional Publicity.—English physicians are at present much exercised over a new rule proposed by the British Medical Association's committee on professional ethics. Hitherto, while no physician owning the degree of M.D.—in England a medical practitioner is not necessarily a doctor—may advertise in the newspapers, it has been the custom there as here for the press in giving an account of any interesting case to mention the names of the attendant physicians. The Association's ethical committee now desires to forbid this, except when the patient is of the royal family.

Extermination of the French Race.—A special correspondent of a New York newspaper resident in Paris writes to his paper in part as follows: Race suicide is a serious question in France, for the population of the country is decreasing, not by emigration, for very few Frenchmen leave their native country compared with those of other nations, but because the death rate is greater than the birth rate. People are dying faster than they are born. According to the returns of the Bureau of Vital Statistics, there were 25,088 more deaths than births in France last year, and 20,000 less births than during the previous year, while the increase in the number of deaths was 37,052. The record shows only 827,207 births for a population of more than 39,000,000. There was a slight increase in the number of marriages, and a slight decrease in the number of divorces, which fell off from 7,179 to 7,157. There were 16,815 more boys born than girls. In all of the European states as well as in South America, the natural increase of the population is considerable every year. France alone shows a decrease. There must be some remedies for these conditions, which the sociologists are now discussing, and the members of the Chamber of Deputies have had them brought to their attention at every session. There is a considerable increase in the number of immigrants every year. The foreign colonies in Paris are very large. There are said to be 15,000 Americans there, 20,000 Spaniards and a corresponding number of representatives of every nation and every race on earth. But France cannot increase in wealth or industry without a healthy growth of the native population. Among the various remedies to arrest the decay of France it is proposed to offer prizes for large families, the remission of taxes to people who have a number of

sons, the extra taxation of childless families and bachelors, and one interesting plan is to make bachelors ineligible for official positions under the government and municipalities.

Obituary.—Dr. Simon Pollack, aged eighty-nine years, one of the oldest physicians in St. Louis, is dead from senile debility. He was born in Bohemia, and came to St. Louis in 1845. His widow was a sister of ex-Gov. Hoadly of Ohio.

Mr. George Lawson, F.R.C.S., Eng., consulting surgeon to Moorsfields and Middlesex hospitals and surgeon oculist to the late Queen, died in London on October 12 in his seventy-third year.

The deaths of other prominent foreign medical men are announced: Dr. Ernest Pflüger, professor of ophthalmology at Berne; Dr. Domenico Tiboue, 38 years professor of obstetrics and gynecology at Turin; Dr. Ricardo Secondi, professor of ophthalmology at Genoa, and Dr. Tschansson, professor of anatomy at Warsaw.

CORRESPONDENCE.

THE VARIETIES OF LINEÆ ALBICANTES.

To the Editor of the MEDICAL NEWS:

DEAR SIR: There appear to be three different groups of the lineæ atrophicæ to which Dr. Northrup called attention in the interesting paper in your last issue: First, those due to distention of the skin, as in pregnancy (lineæ gravidarum), in ascites, and in consequence of a rapid increase in the subcutaneous fat; secondly, the postfebrile cases, met with particularly after typhoid fever and after scarlet fever; and thirdly, an idiopathic form, seen in both men and women, about the knees, the outer aspects of the thighs, below the crest of the ilium and over the shoulders.

In the first group one occasionally meets with persons who, growing fat rapidly, have become greatly alarmed by the appearance of the ugly-looking, bluish-red scars on the skin of the abdomen, due to fissures in the corium. Some years ago I was consulted by a young man from Milwaukee who had got very stout within three months, and who presented in the iliac regions three or four large, pinkish scars, which had been a source of much uneasiness to himself and to his wife. I have reported an instance of very rapid increase in weight, a sort of acute myxedematous condition, in which the patient gained forty-five pounds in three months. There were extraordinary atrophic lineæ on both sides of the abdomen, one of which was ten inches in length and three-quarters of an inch in breadth.

The postfebrile cases are really very common, particularly after typhoid. Duckworth and others have called attention to them. While, of course, as Comby suggests, in young persons who have to remain in bed for some time and who grow rapidly, the scars may be due to this cause, the fact that they occur in adults after fever shows that it is not necessarily associated with increase in length. They may present an extraordinary appearance, particularly on the back. A friend of mine who had typhoid fever when an adult has his sacral region marked by four or five transverse scars, which were noticed a few months after convalescence. After scarlet fever they may be very extensive. Six or eight years ago I reported the case of a girl, aged seventeen years, who was brought to me from Birmingham, Alabama, on account of the scars which had come in different parts of her body after scarlet fever at thirteen years. It is the only instance I have seen in which they were in situations to be really annoying. Not only were they about the knees and the outer surfaces of the thighs, but there were three or four large ones on the extensor surfaces of each elbow and several about the shoulders. As she was approaching the "low-neck and short-sleeve" period of her life, she was naturally very much distressed about them. Her father insisted that they had increased in numbers within the past two years.

And lastly, there are cases in which one cannot fix definitely upon any cause. The scars are seen chiefly about the outer aspects of the thighs and the shoulders, and they have not the extent of the form due to pressure. At the Saint Louis Hospital, this summer, I was very much interested in looking over the models of the lineæ atrophicæ, and piece No. 1504 illustrates a remarkable case of this form. The atrophic lines came in both breasts without any special increase in the size of the organs, and without the existence of pregnancy.

Yours, etc., W. OSLER.

Baltimore, Md., Oct. 31, 1903.

THE HUDSON VALLEY WATER SUPPLY.

To the Editor of the MEDICAL NEWS:

DEAR SIR: In a recent number of your journal, in discussing the water supply of the Mohawk Valley, you state that the death-rate from typhoid fever in Amsterdam is excessively high and that the city pumps Mohawk water for daily use.

I do not know what is the source of your information, for there is no record of any such facts. In recent years the number of deaths from typhoid fever in Amsterdam—with a population of something like 23,000—has run as follows: In 1899 there were four deaths; in 1900, three; in 1901, five; in 1902, four.

For the last fifteen years Amsterdam has taken its water from streams, going back to the foothills of the Adirondacks. It has a lake up in the wilds of Saratoga County, in an uninhabited district, policed and carried down to the city through salt-glazed earthenware pipes, where it is distributed by a gravity system. The filter beds are yet to be added to complete the system, but thus far, the city has expended about three-fourths of a million dollars upon its water supply.

You were also in error in relation to the water supply of Schenectady. They get their water by driven wells. It has happened about four times since the system has been inaugurated, that during times of drought they have run city water through the distributing pipes—certainly not a commendable procedure, but yet not indicating so bad a state of affairs as you have pictured.

An epidemic of typhoid fever that occurred in Amsterdam in 1898 was explainable by the fact that many people employed in Schenectady, but living in Amsterdam, received their infection in Schenectady; in the record of vital statistics these were charged up to Amsterdam. At the same time there was an outbreak in one of the mills, owing to the use of a spring in the neighborhood that was infected. The spring was closed up by the Health Board as soon as it was discovered.

Truly yours,

Amsterdam, N. Y., Sept. 29, 1903. CHARLES STOVER, M.D.

The Importance of Bitters in Digestion.—Bitters have from time immemorial enjoyed the reputation as remedies that excite the appetite and assist in digestion. To investigate the real nature of the effect of bitters P. J. BORISSOFF (Roussky Vrach, No. 32, 1903) instituted a series of experiments, and as a result found that the bitters tend to sharpen the sense of taste and at the same time increase the quantity of the gastric secretions; the sharpening of taste attains a certain degree, but disappears rapidly. The author speaks against the use of large doses of bitters, administered a long time before meals, or in pills.

SOCIETY PROCEEDINGS.

NEW YORK STATE MEDICAL ASSOCIATION.

Twentieth Annual Meeting, held at the Academy of Medicine, New York, October 19, 20, 21, and 22, 1903.

(Continued from Page 857.)

FOURTH DAY—THURSDAY, OCTOBER 22, 1903.

Diphtheria in the Country.—Dr. J. R. Sturtevant, of Theresa, N. Y., detailed some experience with diphtheria cases in country practice. In a number of cases he seemed to find a definite connection between close association with fowls and the outbreak of epidemics of diphtheria. In one case diphtheria developed in a household, shortly after they moved into a house in which fowls had been kept for some time. In another case, in the country, the fowls on the farm suffered shortly before an epidemic of diphtheria from a membranous affection of the throat. Some of these fowls when dead had been thrown into a cesspool, until the stench became unbearable. In another case the fowls had access to a cesspool and somehow this seemed to be connected with the outbreak of the epidemic of diphtheria in the family.

Antitoxin in Medicine Case.—Dr. Sturtevant considers that the country practitioner who is likely to be called for miles into the country should always carry a supply of antitoxin in his medicine chest. It can do no possible harm, and if needed will do immediate good. Antitoxin is of more value than all the other drugs combined. The physician who does not believe in antitoxin should relegate his diphtheria cases for treatment to some one else. Dr. Sturtevant does not believe in very high doses of antitoxin, 1,500 c.cm. of a concentrated serum, seldom failing to bring relief. If necessary, this may be repeated. For disinfection in the country, Dr. Sturtevant has found the burning of brimstone very effective.

Lack of Sanitation and Throat Affections.—Dr. James J. Walsh, of New York, said that the most interesting problem before bacteriologists at the present moment is the mode of existence of bacilli pathogenic for man, outside the human body. It is possible that diphtheria bacilli may exist in fowls and this has apparently been demonstrated in some cases. However, the mere existence of filth is not of itself sufficient to create a specific disease. The carefully collected statistics of men who work in sewers and sewage disposal, in Berlin, London and Paris, show that these laborers do not suffer, as might be expected, more from intestinal diseases than the rest of the population of the cities in their own class, but they do suffer more from non-specific throat affections.

Large Doses of Antitoxin.—Dr. Stranahan, of Brooklyn, said that in his experience he has found scarcely any effect from 1,500 units of antitoxin in bad cases. If the diphtheria appears to be severe he uses 3,000 units, and six hours later, 3,000 more, if necessary. In one bad case recently he saw no effect even from this dose until the fifth injection had been made. Within two hours after this, the diphtheritic membrane peeled off and disappeared. He has found no special difference in the serums manufactured by different firms or by the State. There should be no hesitation in employing large doses since serum has now been proved, by millions of trials, to be absolutely harmless and the theory on which it is given, supposes that it will neutralize the toxins of the disease present, and they are being constantly produced so long as the membrane continues to exist as harboring material for the diphtheria bacilli.

Dr. DeLancey Rochester, of Buffalo, said that he always employed large doses of antitoxin, and since he has come to recognize the necessity for at least 3,000 units he has no deaths from diphtheria.

Other Treatment.—Dr. Ulrich, of Chester, Pa., said that practitioners of medicine who had had experience in the old days, before antitoxin, realized the value of this new remedy, yet would not give up entirely the older methods of treatment. In the first epidemic of diphtheria he ever saw, on a plantation in Louisiana before the war, in the days when diphtheria was first beginning to be generally recognized in this country, many deaths took place, but the patients that were saved apparently owed their lives to the plentiful use of chlorate of potash and the muriated tincture of iron. Some of the patients that recovered from these attacks of diphtheria, suffered from severe postnasal diphtheritic paralysis after convalescence to such an extent that all liquid food was regurgitated.

Segregation.—Dr. Rice said that the first question that should suggest itself to the country practitioner in doubt as to the nature of a particular disease, but suspicious of its diphtheritic character, should be, if possible, to secure segregation of the patient. Mother and child might well be confined to one room, away from the other children, in the hope of preventing the spread of the disease, or, at least, of limiting it.

Antitoxin and Its Value.—Dr. E. R. Ferguson, of Troy, N. Y., said that before the days of antitoxin, he had seen 75 intubations done without a single recovery. In all cases relief was afforded from the threatening symptoms of immediate asphyxiation, but death took place from diphtheritic bronchopneumonia. Virulent infectious material from the diphtheria in the throat was sure to find its way into the lungs and infect them. Since the days of antitoxin most of these cases recover. It is important, however, to give enough of the diphtheria serum, and as it has never done any harm in the immense number of cases in which it has been employed, physicians should not hesitate as to this.

Antitoxin and the State.—Dr. Sturtevant, in closing the discussion, said that the State furnishes antitoxin not only for the indigent, but for those who are considered too poor to pay for such an expensive remedy.

Tetanus Resolutions.— The Secretary then read a resolution presented by the Mississippi Valley Medical Association, at its recent meeting at the beginning of October (the proceedings of which will be found in the present and also in last week's issue of the Medical News). This resolution sets forth that as the result of the celebration of the Fourth of July, according to the customs now generally adopted in this country, 400 deaths from tetanus resulted. It seems important to limit this annual destruction of young life, and the medical societies of this country are asked to pass resolutions instructing legislators to pass laws forbidding the use of toy pistols, cannon crackers, dynamite bombs, and other dangerous fireworks, whose employment is known frequently to be the forerunner of injuries as a result of which tetanus develops. On motion this resolution was unanimously adopted.

Features of Epilepsy.—Dr. B. Onuf, of Sonyea, N. Y., said that notwithstanding long familiarity with the falling sickness, epileptic attacks are not always so easy to recognize as is often thought. By a study of the 800 epileptics at the Craig Colony at Sonyea he has had the opportunity to note carefully the features of the epileptic attack and has found some of the details different from the classical text-book descriptions. With regard to the initial cry, an erroneous idea prevails that it is a shrill cry, high pitched, loud and a conscious expression of the realization by the patient that

the attack is coming on. As a matter of fact, the initial cry is rather a tremulous groan, of low pitch, somewhat quavering, not expressive of surprise or fear, but due to a spasm of the muscle or larynx. The bleating, trembling character of the sound is due to a slight clonic spasm, which occurs in the muscles before the rigid tonic spasm supervenes.

The Pupils in Epilepsy.—It is sometimes said that the pupils are dilated and immobile during an epileptic attack. This phenomenon is considered to be so constant that it is set down as a pathognomonic differential sign between hysteria and epilepsy. Dilated pupils, however, are not constant in epileptic attacks, and occasionally they have been seen when the case was no more than what would be called hystero-epilepsy. As a rule the degree of dilatation of the pupils is a measure of the severity of an epileptic attack, but there are exceptions to this rule.

On careful observation, Dr. Onuf has seen, just as an epileptic attack began, an extraordinary contraction of the pupils. As the attack gained possession of the patient, however, the pupil jumped to extra width and then remained so dilated. In the stertorous stage the pupils again become contracted and remain so until lethargy sets in.

Reflexes in Epilepsy.—When there is not complete clonic spasm the knee-jerks seem to be exaggerated and ankle clonus is sometimes present. In the convulsive stage of the attack, if rigidity be absent, in Dr. Onuf's experience, the reflexes are more commonly increased than diminished. In general there seems to be considerable individual difference in this matter. In the stertorous stage the reflexes are certainly exaggerated as a rule, unless the patient is sinking into coma, or semicoma. It would seem evident that there is still a field for the study of epileptic attacks, notwithstanding the apparent exhaustion of the subject, because of its frequency.

Traumatic Epilepsy.—Dr. Macpherson, of Leroy, N. Y., described the case of a patient in whom a shot wound was inflicted by a drunken husband a short distance in front of the auditory external meatus. This led to convulsions, frequently repeated during the first few days after the infliction of the wound, but afterward there was complete cessation of the attacks for some months. Traumatic epilepsy had developed, however, and the attacks having become more frequent, Dr. Macpherson was considering the advisability of operating for the patient's relief. Portions of the temporal bone were evidently depressed by the bullet wound and the removal of pressure on the brain would probably bring relief.

Advantage of Immediate Operation.—In closing the discussion, Dr. Onuf said the prospect of operation is much better if done shortly after the injury to the brain, than if the pathological condition which develops after the trauma is allowed to become chronic, when it very often happens that nerve centers are irreparably injured and cannot be made to lose the habit of an epileptic attack. Very often in these cases of supposed traumatic epilepsy, however, careful inquiry elicits the fact that epileptic seizures occurred before the injury. Often these were slight or occurred at long intervals and so were not noticeable. Surgeons must be very careful in giving a good prognosis in supposed traumatic epilepsy, unless they have carefully taken the patient's history and are assured that no previous attacks occurred. Heredity is an important factor in these cases also, and it will often be found that there is direct heredity of epilepsy in the family. Almost needless to say where this is the case the prognosis of operation is by no means favorable.

Perineal Prostatectomy.—Dr. Parker Syms, of New York City, gave the details of a series of cases of enlarged prostate treated with good results by perineal prostatectomy. Sixteen of the patients had been living a catheter life. Thirteen suffered from complete retention, one of them from loss of control with retention. Altogether 26 patients were operated upon, with only one death and 20 satisfactory cures. All of these patients were restored to practically normal urinary functions, though the cases presented every phase of prostatic hypertrophy. Three of the hypertrophied prostates were complicated by the presence of calculi. In one of these cases a stone had been removed by a suprapubic operation previously, but another had developed in the prostatic pouch. One of the cases presented a typical pedunculated middle lobe in a prostate that was comparatively small. This patient could not pass a single drop of urine. On the other hand the catheter could be passed very easily, as, of course, it followed the path of least resistance. The case illustrates very well the fact that it is not size alone that represents the main feature of etiology in urinary troubles with enlarged prostate. Often the smaller prostates that are causing trouble are more difficult to remove than large ones. They are not always definitely capsular in arrangement and do not shell out readily. In one case there was a distinct trilobular prostate quite symmetrical in shape This specimen was presented as being very rare not only as a pathological condition, but also because seldom preserved in its entirety during the process of removal.

Operative Technic.—One of the main difficulties in perineal prostatectomy is to be able to bring the prostate well down into the womb. Pressure exerted upon it pushes it away from the operator's finger. For the purpose of dragging the prostate down, Dr. Sims devised a bulb and rubber stem, which is introduced through the membranous urethra after the incision is made. The bulb is dilated with water and thus acts as a firm cushion support for pulling down the neck of the bladder. This enables the operation to be done quickly, completely and with very little loss of blood. The patients operated upon by Dr. Sims were of all ages. Eight were above seventy years, one above seventy-five years and ten from sixty-five to seventy years. The main danger of the operation is not the cutting itself nor the complications likely to ensue in the wound, but the risks due to the anesthetic. Chloroform is usually employed as the anesthetic, because it seems to prove less irritant both to the kidneys and the lungs of these old men.

Thorough Removal.—Dr. Goodfellow, of San Francisco, said that thorough removal of the prostate is important for success in these cases. In more than one case he has removed more than an inch of the urethra in order to be assured of taking away all the tissues that obstructed the urinary passages. As a rule it is not difficult to sweep out of its planes of cleavage the enlarged prostate. Until recently Dr. Goodfellow was of the opinion that all bladders, no matter how much dilated, regained their contractile power when the prostate and the obstacles to the flow of urine it occasioned were removed. He has recently seen a case, however, in which complete atony of the bladder existed and the musculature of the bladder had been so overstretched that it did not regain its power to contract. This patient had thirty-five ounces of residual urine, but had not suffered severely from its presence and complained mainly of frequency of urination. After operation, catheterism three or four times a day had to be continued.

Safety of Perineal Prostatectomy.—Dr. Roth, of New York City, said that after much doubt as to the proper method of operating for enlarged prostate there can now be no doubt that the perineal route is the most

favorable in every way. It is certainly the safest. Five cases with but one death, a mortality of only four per cent. shows how very little danger there is in the operation. The text-books formerly said that the mortality of prostatectomy was 30 to 40 per cent. This deterred many patients from being operated upon and deterred physicians from recommending the operation. As a consequence, operations upon the prostate were done only as a last resort. This will be no longer the case. As a consequence the mortality will fall still lower than before. Years are no contraindication to the operation. Dr. Roth has seen a patient operated upon at the age of eighty-one years, who not only bore the operation well, but had no difficulty from the anesthetic and who recovered promptly and has remained well.

In closing the discussion, Dr. Sims said that as a rule he uses chloroform in his operations because the old bear it so much better. Once and only once he tried spinal anesthesia. The result was so terrifying and so much stimulation was required to save the patient from what seemed impending death that it was never employed again.

Comparative Mortality of Operated and Non-operated Cases.—During the time in which he has been operating upon these 26 patients with one death, Dr. Sims has had under his charge, or has been consulted with regard to at least 20 other patients who refused operation or who could not be persuaded by their physicians to undergo it and who have since died. This feature of the statistics Dr. Sims considers very important. Perineal prostatectomy in the light of these figures is a life-saving operation of great value.

The Eye in General Practice.—Dr. S. Busby Allen, of New York, said that the general practitioner of medicine should have some definite knowledge of eye diseases to enable him to recognize the advance of serious disease in time to refer such cases to specialists for treatment, before irreparable injury has been done to the ocular tissues. With regard to acute glaucoma, the specialists frequently sees cases in which, if the practitioner had tried the tension of the globe he would have realized the necessity for immediate consultation with a specialist in order to have iridectomy done so as to save some vision to the patient. The painful condition of glaucoma, in which the disease is acute, is often preceded by dimness of vision with a rainbow or halo around lamplight. Chronic glaucoma is more difficult to recognize. It occurs in late middle life and may be taken for presbyopia. If sight is not restored by glasses in these persons, or if there is distinct narrowing of the field of vision, or if there is a history of rheumatism in the family, the presence of chronic glaucoma should be suspected and measures of treatment taken accordingly.

Eye Symptoms in Chronic Diseases.—Many chronic diseases present eye symptoms as the first sign. Among these tabes is the most common. One of the most frequent symptoms is diplopia due to the involvement of the sixth nerve. The Argyll-Robertson pupil also occurs but may also be the first symptom in diabetes. A necessity for glasses very early in life should lead to the suspicion of diabetes. Cataract and diabetes are very common. The condition of the pupil is often of important diagnostic value. In tabes and general paralysis there is myosis, or contraction of the pupil. Occasionally the pupil is irregular. In cerebral syphilis there is frequently an inequality of the pupils. This, if it is accompanied by cephalalgia, should always raise the suspicion of cerebral syphilis. The size of the pupils is an individual matter depending somewhat upon the pigment of the iris; a blue iris admits more light to the retina and consequently arouses the sympathetic reflex which brings about some narrowing of the pupil. Consequently the pupils of blue-eyed people are normally narrower than those of dark-eyed people. When the sympathetic reflex is in good condition a pinch on the side of the face causes contraction of the pupil.

Dangers of the Optician.—Not infrequently it is found, when patients have been wandering from optician to optician, seeking changes of glasses, their eventual visit to the ophthalmologist discloses the presence of some serious disease. Acute parenchymatous nephritis is not infrequently discovered. Toxic amblyopias are frequently the subject of such experimentation on the part of the untrained optician. It must be remembered, however, that hysteria may simulate certain of these serious diseases. Dr. Allen had a case under his care for a time that had been under the care of many previous physicians. The man complained of loss of vision and wandered from physician to physician looking for relief. He was a big, strong, apparently healthy, individual, with regard to whom the last thoughts in the world would have been the possibility of hysterical influences having anything to do with the impairment of his vision. His custom was to give each succeeding ophthalmologist an opportunity to treat him for eight months. Then he changed his physician. Dr. Allen was able to do him no good, but several years later met him again and found that he had been completely cured by the cutting of one of the muscles to his eyes. His impairment of vision was evidently a neurosis. The chorea that occurs every spring in some school children is often due to refractive errors. On the other hand, it must not be forgotten that there may be a suggestive element in these cases.

The General Practitioner and the Ophthalmoscope.—Dr. Higgins, of Cortland, N. Y., said that the general practitioner of medicine must not only be able to recognize the ordinary external diseases of the eye, but should be able to use the ophthalmoscope. All neurologists who take their specialties seriously, now consider it necessary to use the ophthalmoscope, since there are so many diseases of the nervous system that give their preliminary symptoms in the eyeground.

Rheumatic Heredity.—Dr. James J. Walsh, of New York, asked what the eye specialists mean by the term the rheumatic tendency or rheumatic heredity. Acute rheumatism is an acute infectious disease. The most characteristic element of which is that it gets better completely. One might as well speak of a tendency to pneumonia, because in some families pneumonia seems to come easier than in others and because some patients suffer from repeated attacks of the disease. The word rheumatic thus used gives the impression of a diathesis, for which there is no definite basis in medicine.

Dr. Allen, in closing the discussion, said that by the word rheumatic he refers to well-known exudative tendencies that exists in some patients and causes them to have chronic joint affections. In these cases there is a likelihood of the occurrence of exudation that closes up the anterior chamber of the eye and so brings about the increase of intraocular tension known as glaucoma. Dr. Allen considers that every general practitioner should be able to use the ophthalmoscope, but no one, unless very expert, should place too much dependence on his judgment of eye affections, if he has not had a large experience in them, since mistakes with regard to so delicate a structure are dangerous and delay is almost sure to be followed by irretrievable injury to this important sense organ.

Early Diagnosis of Tuberculosis.—Dr. James J. Walsh, of New York City, said that the important element for early diagnosis of tuberculosis is not to be found in the physical signs, which may not give definite information until the disease has made considerable progress, but in the individual environment. Tuberculosis should be considered as an infectious fever. The first question the physician asks with regard to an in-

fectious fever suspected, is, Are there other cases of this disease in the neighborhood? or, Has the patient been in contact with them? This same question should be asked with regard to tuberculosis. It is not the family history that is important, but the history of those with whom the patient is living and working.

Pulse and Temperature.—In suspected infectious disease the physician does not consider that he can give a negative diagnosis, even though he finds no definite localized signs of the disease if the pulse and temperature are in any way disturbed. The important thing, in the light of our modern knowledge, is to discover the presence of tuberculosis as early as possible. The ordinary physical signs may fail in this and it is better to be sure than sorry, and to warn patients of the necessity for care when their constitutional conditions are not entirely reassuring. Dr. Walsh said that in order to take the pulse and temperature properly, observations should not be made once a day, but at least three or four times. In the early morning, at noon and at night. The normal temperature range is about a degree and a half in the twenty-four hours. Even a slight increase of temperature with a localized lengthening of expiration over any part of the lungs, is of itself sufficient to indicate that pulmonary tuberculosis is present. Patients then should be warned of their condition and told of the necessity of taking care as to air and diet, for these will of themselves prove sufficient to bring about a cure in initial cases.

Temperature Rhythm.—Dr. DeLancey Rochester, of Buffalo, said that while normally the temperature is highest in the afternoon it must be remembered that tuberculosis may disturb this normal rhythm and the highest temperature may occur late at night, or even very early in the morning. The patient's temperature, in suspected cases, should be taken as early as six in the morning and as late as ten at night. The pulse is usually disturbed for a considerable period before there is any disturbance of temperature. The first physical sign that there is of diagnostic value, in Dr. Rochester's experience, is a rise in the pitch of the percussion note. Percussion should be made not only over the clavicle in front, but especially over the scapula behind. Patients should be stripped to the waist and their respiration rhythm should be observed very carefully, as sometimes it is slower on the affected side. Dr. Rochester considers that tuberculin is a very important means of making an early diagnosis of tuberculosis.

Insistence on Non-heredity.—Dr. S. A. Knopf, of New York City, said that the salvation of most tuberculous patients depends not on the tuberculous specialist, but on the family physician. He first sees these cases and at a time when cure, or improvement, is comparatively easy. It is his duty to see that no means for the early diagnosis for tuberculosis shall be neglected. To ask the usual question, Did father or mother die of tuberculosis? is to impress upon the patient the idea that the physician believes in direct heredity. This is not only a false notion in itself, but it serves to discourage many patients and give them the idea that their disease is incurable because inherited. As the most important element in the therapeutics of tuberculosis consists in the patient's own feeling of encouragement, it is important to remove the illusion with regard to heredity.

Early Signs of Tuberculosis.—Dr. Knopf said that an excellent way to secure evidence of the tendency of the tuberculous patient's temperature to rise is to take the temperature after exercise. Another early important sign of tuberculosis is what is known as Murat's sign. This consists in having the patient talk loud when there is a distinct feeling of vibration over any solidified area of the lung. Deep expiration gives a fremitus that has been noticed even by the patient himself not infrequently. With regard to occupations and their connection with tuberculosis patients should be asked the details. A clerk working in a shipping department, usually in the basement amid dusty surroundings without light or proper ventilation is much more liable to tuberculosis, than a clerk in the silk department. With regard to tuberculin, as it is sometimes dangerous and has been known to give positive reactions in syphilis actinomycosis and even chlorosis, its use is not advisable.

In closing the discussion, Dr. Walsh said that the constant signs of the earliest stage of tuberculosis are disturbance of pulse and temperature and a localized prolongation of expiration. Change in the percussion note comes later than this and is not constant, for dilatation of the air vesicles in the affected area may lower an abnormally raised note to normal pitch. With regard to tuberculin, very few physicians would care to use the remedy, or have it used on friends. There is a distinct element of danger in its use. It may cause a generalization of the process. For very early stages of tuberculosis this is not justifiable.

Sepsis Treated by Collargol.—Dr. George Tucker Harrison, of New York, read a paper on his experience in the treatment of septic infection by the use of intravenous injections of collargol. He said that silver salts inhibit bacterial growth, though they are not directly bactericidal. Even 1 to 5,000 solution of collargol actively inhibits all pathogenic bacteria. Collargol now comes in the form of scales and granules, which dissolve easily and completely in water, making if necessary a five-per-cent. solution. In solutions of 1-5,000 this may be employed for intravenous injections and actively inhibits bacterial growth in the system. Dr. Harrison has used it in cases of septic osteomyelitis and in polyarthritis septica with excellent results. For septic conditions after labor it is especially effective. A large number of German authorities report very good results with it and Dr. Harrison has been able to confirm their observations. No harm ever came from its employment.

Acute Cholecystitis.—Dr. John H. Musser, of Philadelphia, delivered an address on the subject of acute and chronic cholecystitis. With regard to acute cholecystitis medical literature does not tell how frequent it is, since, in the past the affection was not recognized, and, like in appendicitis, only recent experience is of avail with regard to its character and occurrence. It is evident that it is a very common affection. Not infrequently it occurs after typhoid fever, and it seems very probable, in the present state of our knowledge, that so-called relapses of typhoid fever are not infrequently nothing more than cholecystitis. In certain cases a tumor in the gall-bladder region with localized pain has been noted and the temperature has been reported as not properly typhoid in character. Usually there is a low temperature in the morning and high evening rise, indicating the septic nature of the affection. Cholecystitis is not infrequently a complication of gall-stones though it is also probable that the original tendency to the formation of gall-stones is in most cases due to an attack of cholecystitis.

Types of Cholecystitis.—The affection is mild, severe, or gangrenous, as the corresponding cases of appendicitis and the true character of the affection may escape recognition. As in the case of the appendix there may be colic and the other symptomatology runs parallel. Usually it causes jaundice and this is not infrequently ascribed to a catarrhal process. Catarrhal jaundice, however, is a term which will have to be eliminated to a great extent from medical literature. This form of jaundice commonly follows some infection of the biliary passages. Usually there is pain and tenderness in the region of the gall-bladder, but there may be a complete latency of symptoms, the patient feeling only

uncomfortable, and there being a rise of temperature. In severe cases the symptoms are usually thoroughly localized and it is not difficult to recognize the true nature of the affection. Exquisite tenderness over the fundus of the gall-bladder and rigidity of the muscles in the right hypochondrium are the characteristic features in severe attacks.

Gangrenous Cholecystitis.—In what may be called fulminant cases gangrene develops in from twenty-four to forty-eight hours. As in the corresponding case of gangrene of the appendix, no pain is felt once the gangrenous process asserts itself. The patient may consider himself much better, and it is easy for the attending physician to be led astray into the idea that there is real improvement. Peritonitis follows, however, with nervous disturbances, chill and sometimes rigor and shock. Rigidity and tenderness disappear after the gangrene has set in, and there may be no resistance even to rather deep pressure. The classical position for tenderness is at the ninth rib, but it may be lower down. A previous history of gall-stones is an important auxiliary in the recognition of cholecystitis, but it must not be forgotten that the existence of a previous pathological condition may have caused some dislocation of the gall-bladder. Anomalous positions of the gall-bladder, as is also true of the appendix, may cause displacements of the point of tenderness, so that it may be low down toward the right iliac region, or the tumor may even be median, or be situated a little to the right of the umbilicus, or may be so low down as to be mistaken for appendicitis.

Diagnostic Aids.—Tenderness is the most frequent sign. At times the gall-bladder may be contracted under the ribs, so that it has to be "hooked for," to use the characteristic expression of Dr. John B. Murphy. Nausea and vomiting in cholecystitis are not so frequent as might be expected. They do not occur so often as in appendicitis. The differential diagnosis requires the separation, especially of appendicitis, and in rare cases of pancreatitis. In one case under Dr. Musser's care, the patient presented pain in the epigastrium and tenderness in the median line with a suspicion of cholecystitis. There was, however, an elevation of the apex of the heart, and dull tympany in the left epigastrium. Dr. Musser suspected the presence of pancreatitis as a possibility, and the suspicion proved correct. The only safe course in severe cases is to explore. Nearly 40 per cent. of the unoperated cases die, as against 5 per cent. of those operated upon. Early operation will prevent subsequent pancreatitis and cholelithiasis, both very serious affections.

Shock in Cholecystitis.—Dr. Robert Morris, of New York, said that shock is quite severe in affections of the biliary passages, because these are covered by a network of sympathetic fibers closely in relation with the great sympathetic ganglia of the abdomen, only a short distance from the semilunar ganglion. An affection of the biliary tract is likely to be followed by reflex neurotic symptoms, and this adds another reason for counseling early operation. The physician should not wait for the occurrence of jaundice, before recommending consultation with the surgeon. Dr. Morris has seen a case of acute cholecystitis recently followed by a typical attack of typhoid fever.

Cholecystitis in Typhoid.—Dr. Alexander Lambert, of New York, said that cholecystitis is undoubtedly more frequent after typhoid fever. At times the typhoidal affection may have this for a sequela that gives symptoms for many years. In a patient recently seen the typhoid occurred sixteen years ago. Since then there have been irregular attacks of pain in the epigastrium, considered by various physicians to be due to gall-stones. After a rough sea voyage recently the patient developed a rather severe attack of what was apparently gall-stone colic. The tenderness of the gall-bladder region was marked. Fever continued for some time, and after a while the temperature chart disclosed a characteristic typhoid temperature curve. This ran a mild course, and it seemed evident that the relapse of typhoid fever in the case was due to reinfection from typhoid bacilli stored up in the gall-bladder, which had remained latent, except for occasional mild attacks of cholecystitis for these sixteen years.

Dr. Musser, in closing the discussion, said that besides acute cholecystitis chronic cholecystitis must be considered, though when it entered into this stage, operation was much more difficult. Besides acute pancreatitis, cholecystitis might give rise to chronic pancreatitis, with consequent serious disturbances of metabolism and nutrition.

Surgery of Salpingitis.—Dr. Henry C. Coe, of New York, said that for inflammatory diseases of the appendages after trying both the abdominal and the vaginal route he had come back to the use of the abdominal method. With regard to conservative surgery of the appendages he believes that all adhesions should be broken up and the tubes and ovaries released, but the surgeon may easily err on the side of conservatism with danger of leaving affected tissues that may require subsequent operation. Dr. Coe doubts, for instance, whether it is ever wise to consider that an infected tube can be disinfected by syringing or by any cleansing method. He does not consider that salpingo-salpingostomy and some of the other operations with long names on the tube itself, such as a new implantation of the tube into the uterus, are ever likely to produce good results. He is skeptical of reopening the lumen of the tube that has ever been thoroughly closed up by adhesions. The normal caliber of the tube is too small to furnish basis for any such hope. When portions of the tube must be removed he considers that it is better to remove the organ completely, so as not to run the risk of leaving a stump which may give further trouble. The remote results of the so-called conservative operations are often not favorable, though the patients do not always return to the original operator, but go to someone else to exhibit the failure of the previous operator.

Etiology of Salpingitis.—Dr. Edward J. Ill, of Newark, N. J., said that practically all the affections of the uterine appendages are due to bacteria. It is possible that slight congestions consequent upon exposure and traumatism may simulate the results of infection. On the other hand, circulatory disturbances of passing character are the commonest basis of true salpingitis. There are five specific infections: The gonococcus, the streptococcus, the staphylococcus, the *Bacillus tuberculosis*, and the *Bacillus coli communis*. Gonorrheal infection is the most frequent and always produces serious results. Though its power for harm was pointed out by Noeggerath as early as 1872 it is only in recent years that the proper realization of its possibilities for evil are generally recognized. The streptococcus infections, usually of puerperal origin, are the most fatal, though recent reports seem to show that some remedies may prove of avail against them.

Non-operative Treatment.—Dr. W. Travis Gibb, of New York City, pointed out that it is a mistake to suggest operation for many gynecological conditions of the tubes immediately on seeing the patient. In all cases the patient should be given the benefit of palliative treatment, and where the general heatlh is not good the constitutional condition should be improved, when it will often be found that apparently unbearable symptoms become very much relieved. Operations are often necessary, eventually, but a course of preparatory

treatment, instead of militating against the success of an operation, is likely to prove of service in making the operation more immediately beneficial. Dr. Gibb believes that in all cases an extended course of treatment by douches of hot saline solution should be employed, and tampons of boroglycerite should be packed into the vagina. One tampon is not sufficient, but several should be employed, usually at least three, though there should be no distention of the orifice of the vagina. Patient effort should be employed in this direction, until failure by this means is assured, before operation is recommended.

Palliative Treatment.—Dr. William L. Polk, of New York, said that in gynecology, as in affections of other parts of the body, operative procedures should be avoided until absolutely necessary. Physicians should look for the resolution of inflammatory conditions, and thus spare the patient the necessity for the operation. Where pus actually exists, the rule must be, as in other parts of the body, to evacuate. This can be done through the posterior cul-de-sac of the vagina, without exposing the patient to any serious risk.

Veratrum Viride in Gynecology.—Dr. Bonifield, of Cincinnati, said that the social condition of the patient must form the basis of the judgment as to whether radical or palliative treatment shall be adopted in gynecology. If women are hard-working and must continue their work, then radical operation may be necessary. When, for the same condition, in a woman who does not have to work, palliative measures may be advisable. In Dr. Bonifield's experience, the best drug for the relief of the discomfort attendant on salpingitis is veratrum viride. It relieves pain and has none of the objections of opium. It should be used to its full physiological effect, and for this should be given in subcutaneous injections of eight to fifteen minims for a robust woman, repeated in twelve to fifteen hours, if necessary. It affects the liver, skin and kidneys, and produces excellent satisfaction.

Conservative Gynecology.—Dr. J. Riddle Goffe said that the limits of conservatism in gynecology are not yet thoroughly understood. In acute cases much may yet be accomplished. In chronic cases present experience is all in favor of conservatism. Personally he opens up the fimbriæ of chronically inflamed tubes under a spray of saline solution in the hope of restoring the women to fertility. He does not hesitate to leave the stump of a tube, and considers that the rule should be in favor of conservatism even in ectopic pregnancy.

Ileocolitis in Children.—Dr. Thomas M. Rotch, of Boston, Mass., discussed the clinical aspects of ileocolitis in children. Accepting the distinction made by the American Pediatric Society of simple and fermental diarrhea and ileocolitis, Dr. Rotch has found on investigation that though simple diarrhea is usually considered to be non-organismal in origin, organisms are occasionally found in what would clinically be considered to be no more than simple diarrhea. In fermental diarrhea organisms resembling Shiga's bacillus are occasionally found, though there are other microbes which are also apparently pathogenic. In a series of cases examined, 30 per cent. of those classified as fermental diarrhea proved to have organisms resembling Shiga's bacillus. In ileocolitis 70 per cent. of the cases presented the same organism. It is possible that the clinical distinctions in these cases may be due to the extent of the pathological invasion by the organisms, and the lack of resistive vitality. In the light of Dr. Park's researches in New York it seems probable that there are groups of organisms of which Shiga's bacillus is the characteristic representative of a family.

Colon Bacillus in Genito-urinary Tract.—Dr. Albert H. Ely, of New York, said that in patients of all ages infections of the urinary tract may be found, due to the colon bacillus. In some of these cases, especially in children, the infection is so chronic as to suggest the thought of tuberculosis. When the colon bacillus cystitis occurs, Dr. Ely has frequently found that there was no accompanying infection of the vagina, and especially there were no gonococci present, yet the cases proved very intractable. The use of borolyptol for irrigations was often followed by favorable results, where it fails ichthyol may be employed. In women at the menopause cystitis not infrequently occurs, and the symptoms are not due to an irritable nervous bladder, but apparently to a lack of resistive vitality and infection by colon bacillus.

In discussing Dr. Rotch's paper, Dr. Northrup, of New York, asked if there was not an analogy between dysentery and diphtheria in the varying virulence of the cases, though micro-organisms of the same kind were at work in different patients.

Varieties of Dysentery.—Dr. Holt, of New York, said that he has seen 32 autopsies on patients dead after infection by Shiga's bacillus. In these all grades of colon lesion were found. In Dr. Holt's opinion the serum is still *sub judice*. In mixed infections and in fermental diarrheas, it does no good. In typical cases of dysentery due to Shiga's bacillus, its administration is followed by some remarkable cures.

Summer Diarrhea and Dysentery.—Dr. J. E. Winters, of New York, said that there are two distinct diseases under consideration, summer diarrhea and dysentery. They have no etiological relation to each other. Dysentery is a highly infectious and dangerously contagious disease, even more so than typhoid fever, and requiring more careful prophylactic precautions. In an epidemic of the disease seen at the Hebrew Orphan Asylum, some five or six years ago, 112 cases came under treatment. The toxemia of the disease is almost exactly like that which develops in scarlet fever. No treatment seemed to be of any use at that time. The infection seemed to have come through the water. The dead end of a main near the asylum apparently harbored the bacilli, and it was especially those children who drank water early in the morning, after it had been standing in the pipe overnight, that had been affected.

Shiga Infection.—Dr. Rowland G. Freeman, of New York, said that he had seen 44 cases of Shiga infection last summer, in three institutions. All had blood and mucus in the stools, though the cases were of varying degrees of severity. The fatality varies greatly in different institutions. In one 19 out of 22 patients died, in another only 2 out of 13. Serum was used in every second case under treatment. The mortality was very slightly in favor of serum cases. Dr. Freeman considers that the present dose of serum is far too small. In the pathology of the cases Dr. Freeman had observed ileocolitis as always present.

Dr. Frederick Holme Wiggin, the retiring president of the Association, then presented to the members the newly elected president, Dr. William Harvey Thornton, of Buffalo, and the meeting adjourned.

NORTHWEST MEDICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, Tuesday, September 8, 1903.

President, Wm. Egbert Robertson, M.D., in the Chair.

Certain Conceptions Regarding Maternal Impressions, Heredity and the Genesis of Tumors.—This paper was read by Dr. W. Wayne Babcock. He traced the development of the fetus from the moment of conception and called attention to the general impression that after conception the mother had no influence over

the fetus except from malnutrition and the injection of poisons into the body. He then referred to the possibility of certain cells from the mother having certain influence over the fetus being thrown into the circulatory system of the child, and remarked the fact that there were particular substances in the blood having a particular effect over particular cells, such as the hepato-lysins, which will dissolve liver cells, while other cells will be uninfluenced by them. Experiments have shown that the blood of lower animals does not contain these substances, and while it has not been demonstrated that there is a specific substance in the blood of each cell in the body, yet the fact has been shown that certain cells from certain sources would be acted upon by certain substances in the blood which would have no effect on other cells. He believed that not only the cruder changes could be effected in this manner, but that it might be demonstrated on the central nervous system, and that it might take place even after the organ was formed either by the formation of, or the increase in the amount of these substances in the blood of the mother and transferred to the child. He believed the same methods could be applied to the development of tumors in the various parts of the body. He referred to the theory of Cohnheim that certain cells predominated in certain parts of the body, and the consequent development of tumors if they were excessive in amount. The author felt that the formation of tumors could be explained as well by the absence of these substances, and compared it to the case of injecting epithelial cells into the arm, where they would be quickly destroyed, whereas if they were injected into a granulating surface, they would rapidly develop.

Dr. Wilmer Krusen stated that the obstetrical world was divided as to the influence which caused these conditions; one side maintaining that it was the physical influence and the other that it was the psychical influence. He felt that the widespread idea which existed among the laity of this influence was sufficient to warrant the profession in giving some attention to it, and while it was hard to understand how the influence could be exerted after the various organs were formed, he felt that this was possible in the methods outlined by Dr. Babcock. He referred to a case reported by Dr. Barton Cooke Hirst, in which the husband had dragged the mother of the child around by the ear during pregnancy, and the child was born with a triangular piece out of the ear.

Dr. Arthur P. Hitchens referred to the experiments of injecting potassium bichromate into a rabbit to destroy the kidney cells, and in a short time the blood of that animal would produce a like effect upon the kidney cells of another rabbit, the same being true of phosphorus injected into a rabbit in sufficient doses to cause hepatic trouble, which he felt was similar to the mother having tuberculosis during pregnancy, the pneumolysins in her blood would be communicated to the blood of the fetus, and while they would not be sufficient to destroy the lung tissues they would probably be much weakened.

Dr. Wm. Egbert Robertson viewed the theory advanced by Dr. Babcock favorably, but believed that the impressions might be caused either by the psychical effect or by transmission through the blood of the mother to the child.

Dr. W. Wayne Babcock, in closing, referred to the work of Dr. Flexner and others, which had shown that there existed in the blood certain distinct solvent substances for renal cells, hepatic cells, spermatozoa, etc., and that after the element in the blood which destroyed one class of these cells had been destroyed, there still remained substances which had the power of destroying cells of the other classes, and suggested the probability that substances existed in the blood, applicable not only to these substances but to all cells in the body. He reported two cases, the first of which the mother was burned so that she died in a short time. The fetus was nearly full term and showed areas of atheroma exactly corresponding to the burns on the mother. The other case, the child had only two fingers on each hand. The mother when about six weeks' pregnant had been handed a glass of water by a man whose hands were in this condition, and was quite shocked and continually talked about the matter during pregnancy.

Dionin—A New and Valuable Agent in Ophthalmic Therapeutics.—This was the title of a paper read by Dr. Wendell Reber, in which he remarked that the ethyl compounds were superior to the methylic in ophthalmic work, which was probably the reason dionin had found such favor, it being an ethyl compound. After dealing at some length with the composition of this drug, he referred to its use by Schroeder, in phthisis, chronic bronchitis and pulmonary emphysema, who had found it superior to codeine or morphine in these conditions. The drug was first introduced into ophthalmic work by Wolffberg, of Breslau, who claims that as well as a profound analgesic power, it exerts a favorable influence upon a morbid process, facilitating dilatation of the pupil when it is slow under the action of morphine. After giving a careful résumé of the literature on the subject, he stated that he had used the drug in the following conditions: (1) Postoperative complications; (2) iritis; (3) interstitial keratitis; (4) vitreous opacities; (5) glaucoma; (6) corneal opacities; (7) sympathetic ophthalmia. He stated that the first case in which he had employed dionin was one of iritis with the development of a bacterial colony in the anterior portion of the vitreous humor with impending panophthalmitis following needling of a secondary capsular cataract. The next day the patient was entirely free from pain, and in five days the capsule of the lens had entirely disappeared and the bacterial colony was gone. The author stated that he had used dionin in two subsequent cases of cataract with excellent results. In the cases of iritis in which he had employed the drug, there had been a relief of the pain in two hours. In two cases of interstitial keratitis, the dionin not only assisted the atropine, but promoted absorption of the newly-formed matter in the stroma of the cornea. In two cases of vitreous opacity (senile) and one case of corneal opacity occurring in a child five years old, no effect was produced, although some writers have reported good results in these conditions. In a case of corneal ulcer (probably of pneumococcic type), occurring in a woman aged sixty-nine years, who had suffered for four years past with absolute glaucoma of the right eye, a 10-per-cent. solution of dionin was combined with the eserin collyrium she had previously been using and within twenty-four hours she was entirely free from pain and the tension of the eye had been considerably reduced. In one case of sympathetic ophthalmia dionin was found to be of great service in promoting absorption of the plastic exudate in the pupillary space after the removal of diseased eye. Dionin relieves pain without in any way affecting sensibility, and it also acts as a lymphagogue, stimulating the lymphatic and vascular circulation of the eye. The drug may be used in four forms, *i.e.*, powder, solution, ointment, cocoanut butter rods, the form in which it is used depending largely upon the personal preference of the operator and the exigency of the case.

Dr. Reber, in closing, stated that whether the action of dionin was due to its irritating or counterirritating effect was not known, but that there was no other known irritant or counterirritant that would produce the same effect. He stated that it was very efficient

in accelerating the work of the lymphatic circulation of the anterior portion of the eye and was also claimed to promote absorption of the subconjunctival extravasation of blood. He remarked that in about three-fifths of the patients sneezing for a short time would follow its application.

BOOK REVIEWS.

Dorland's American Illustrated Dictionary. By W. A. Newman Dorland, A.M., M.D. Third edition. W. B. Saunders & Co., Philadelphia, New York and London.

In a previous number of the Medical News we have had occasion to recommend in unqualified terms this volume of Dr. Dorland's as one of the most convenient of the compact dictionaries. It is unique in its features of grouping allied subjects under one heading, and for the brevity of its definitions we know of no dictionary that approaches it. We can commend to our readers the third edition as fully up-to-date and as reflecting the advances of modern medicine in a most satisfactory manner.

A Manual of Obstetrics. By A. F. A. King, A.M., M.D., Professor of Obstetrics and Diseases of Women and Children, Medical Department of Columbia University. Ninth edition, revised and enlarged. Lea Brothers & Co., New York and Philadelphia.

King's Manual has occupied a position *sui generis* among the smaller works devoted to obstetrics, as the most succinct, reliable and at the same time individual book for a student and practitioner. We can add very little to our previous commendation of this book, as its merits are well known to the physicians of this country.

Believing as we do that obstetrics, as a science and as an art is too much neglected by the general practitioner, to the detriment of the health of many of their clients, we cannot urge too strongly the merits of a book of this kind.

A System of Physiologic Therapeutics. Edited by Solomon Solis Cohen. Vol. VIII. Rest, Mental Therapeutics, Suggestion. By Francis X. Dercum, M.D., Ph.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College, of Philadelphia. P. Blakiston's Son & Co., Philadelphia.

We feel that we can congratulate Dr. Cohen most heartily on the appearance of Volume VIII of his System. He is particularly fortunate in the choice of his present author and in the method in which the subject has been handled.

We all know that as physicians we are too much inclined to tell our patients to go and take a rest, without giving them specific directions how best to do it. We are all both consciously and unconsciously practising crude formulæ of mental suggestion without any well-defined and coherent system with which to make our suggestions more effective, and in the general management of the sick we are all most too prone to turn over details to an intelligent relative, an old lady in the neighborhood, or a trained nurse.

It is just along these lines that Dr. Dercum's book offers a most fruitful series of helpful ideas.

He considers in detail the various forms of rest cure, discussing particularly the fatigue neuroses, neurasthenia, hysteria, hypochondriasis and the application of rest to a number of organic diseases. In his therapeutics of mental diseases, he discusses the general principles of the treatment of the insane and gives a very excellent summary of the modes of treating the drug habits.

The chapter on suggestion is particularly helpful, and we can cordially recommend this volume to the general practitioner.

Jahresbericht über die Fortschritte in der Lehre von den pathogenen Mikroorganismen umfassend Bacterien, Pilze und Protozoen. Von Dr. P. von Baumgarten and F. Tangl. Seventeenth year, 1901. Second part. S. Hirzel, Leipzig.

The last issue of Baumgarten's Jahresbericht contains the same wealth of references as the former volume. We believe that there is nothing like this published anywhere else in any other language and there is no question but that the student in microparasitology cannot get along without it.

We are more than pleased to note that a work of this kind, of such high character and completeness, can be published at a reasonable profit by the publishers, and we hope for this Jahresbericht many more years of successful continuance.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Encyclopedia Medica. Volumes 7 to 13. Liver to Zinc Poisoning. 8vo. Longmans, Green & Co., New York.

Diseases of the Skin. By Dr. Malcolm Morris. New edition. 12mo, 642 pages. Illustrated. W. T. Keener & Co., Chicago.

Physics and Inorganic Chemistry. By Dr. A. McGlannan. 12mo, 215 pages. Lea Brothers & Co., Philadelphia and New York.

Physical Diagnosis. By Dr. Richard C. Cabot. Second revised edition. 8vo, 320 pages. Illustrated. Wm. Wood & Co., New York.

Medical Directory of New York, New Jersey and Connecticut, 1903. 1,050 pages. New York State Medical Association, New York.

Transactions of the American Pediatric Society. Edited by Dr. W. L. Carr. 8vo, 310 pages. Illustrated. Archives of Pediatrics, New York.

A Text-Book of Obstetrics. By Dr. B. C. Hirst. 8vo, 900 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Medical Miscroscopy. By Drs. M. I. Cross and M. J. Cole. Third revised edition. 8vo, 292 pages. Illustrated. W. T. Keener & Co., Chicago.

Nose and Throat Work for the General Practitioner. By Dr. G. L. Richards. 12mo, 330 pages. Illustrated. International Journal of Surgery Co.

American Pocket Medical Dictionary. Edited by W. A. N. Dorland. Fourth edition. 12mo, 566 pages. W. B. Saunders & Co., Philadelphia, New York and London.

American Text-Book of Surgery. Edited by Drs. W. W. Keen and J. W. Wight. Fourth edition. 8vo, 1,363 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Surgical Handbook for the Use of Students, Practitioners, House Surgeons and Dressers. By Drs. F. M. Caird and C. W. Cathcart. Twelfth edition. 12mo, 323 pages. Illustrated. W. T. Keener & Co., Chicago.

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ORIGINAL ARTICLES.

CHRONIC VILLOUS ARTHRITIS, WITH SPECIAL REFERENCE TO ITS ETIOLOGY AND PATHOLOGY.*

BY CHARLES F. PAINTER, M.D.,

AND

WILLIAM G. ERVING, M.D.,

OF BOSTON.

IN a paper published in the *Boston Medical and Surgical Journal* under date of March 19, 1903, the authors undertook to review the literature of lipoma arborescens, and to supplement this with a report of seven cases which had come to operation. In that series the lipomata were discrete, usually single growths, and would be better described as fatty tumors than as the arborescent lipoma. The pathological investigation of these growths, however, shows that they were undoubtedly degenerated villi and not true tumor formations. They had, however, lost all gross resemblance to the original fringes from which they were developed. As discrete tumors, they gave rise to rather different symptoms than the ordinary synovial fringe.

In the literature there are several authors who believe that the fatty growths found in the joints are true tumors, which push their way in from the outside rather than develop from within. The article just referred to, we think, shows that these growths are the result of an hypertrophy of synovial villi. There are, clinically, a great many cases where the villi are hypertrophied, and where the isolated, single lipomata are not present. The purpose of this article is to report a study of 33 cases of hypertrophied villi,† caused by various conditions, and to show, if possible, the varying etiology of this joint disease, and to put on record the pathological findings observed in these cases.

REPORT OF CASES.

Case No. 1.—1898. H., male, forty years of age; a motorman.‡ Diagnosis, osteo-arthritis. The patient felt pain, particularly in walking, with swelling in both knees, and limitation in extremes of both flexion and extension. There was no locking, and the function was limited. General tonic treatment. Both knee-joints, the feet and the fingers were involved. Motion of knee two-thirds of normal arc. The examination of knees also showed general diffuse swelling, but no definite fringe, and the joints were tender. A lateral incision (internal) was made in one knee, showing the capsule to be thick and very vascular on the synovial side, and containing fibrinous clots. The fringes were numerous, attached to the synovial membrane in its entire extent, dark reddish purple in color and soft. Some hemorrhage occurred. The capsule was closed with silk, not drained, and a plaster dressing applied. Patient was lost sight of after his discharge from the hospital. He had a great deal of trouble in the other knee and the other joints. The knee which had been operated upon was less painful when he left the hospital than it had been and was less swollen.

Pathology.—Microscopically the cross section of a fringe shows a thin enclosing membrane of endothelium. Within is connective tissue densely infiltrated by small round cells, which form not only a broad peripheral band, but also penetrate deeply into the tissue, usually in round agglomerations. The fibrous tissue is abundantly supplied with vessels which show thickened walls and are filled with blood. At a little distance from the cortex the connective tissue becomes granular in appearance and small areas of fat cells appear. There is marked hemorrhagic extravasation throughout the tissue.

Case No. 2.—May 12, 1899. M. F., female, twenty-nine years of age; a machine stitcher. Diagnosis, joint syphilis. The patient's family and past history are negative and no exciting cause is known for her present illness, the onset of which occurred three and one-half years ago, when the patient noticed swelling around patella of the right knee, and two years ago pain in the upper part of the right thigh and some in the knee. Since then the swelling has increased. On examination the right knee was found to be involved, with localized swelling on the outer side of the joint and some synovitis. The amount of motion was nearly normal. A fringe could be readily felt on the outer side of the knee and the joint was tender. On May 12 an excision of the lipomatous fringe on the outer aspect of the right knee was done. Incision in outer aspect of joint revealed a cyst, which was drained, and one hypertrophied fatty fringe in the joint, attached to the synovia, the size of a small hen's egg, and supplied with blood through a pedicle, was removed.

It was grayish in color and of a firm consistency. No ligatures or irritation, the capsule was closed with silk, without drainage, and a soft dressing applied. The general postoperative condition was good, the stitches were taken out in eight days, and the joint immediately manipulated. In two weeks the motion was fairly good.

Pathology.—The pathologist reported that the fringe removed was tuberculous. On the strength of his report the knee was excised with a good

* Presented at the Seventeenth Annual Meeting of the Orthopedic Association, Washington, D. C., May 11-14, 1903.

† Seven have been reported as above stated. The other 26 have not before been reported.

‡ Diagnosis at beginning of history signifies etiological factor in case.

result. A little later superficial skin ulcerations appeared on the left side of the neck. These were very indolent. Six months later a hard annular swelling, accompanied by pain, appeared on the left humerus in the upper third of the shaft. Under the administration of iodide of potash and mercury both this swelling and the ulcerations in the neck entirely disappeared, and she has since remained well, with the exception of a short interval when she omitted the iodide. The return to the drug was marked by immediate improvement.

Case No. 3.—June 9, 1899. J. A. R., male, eighteen years; at school. Diagnosis, acute arthritis with succeeding rheumatoid condition. Five months ago patient had an attack of acute rheumatism involving all the joints and the eyes. A typical case of acute articular rheumatism with pain, swelling and limitation, but no locking; attended by a loss of function for sixteen weeks. The condition gradually improved. On examination the patient was found to be poorly developed and nourished. The knees and ankle-joints were involved. Motion was free in the knees. Fringes could be felt, but there was no tenderness. A lateral incision in the left knee showed the capsule to be thickened, containing some fibrin but no excess of fluid. Numerous fringes were attached to all parts of the synovial membrane, arborescent and very large, vascular, purple in color, and soft, except for the tips of a few which were fibrous. There was some hemorrhage, the wound was irrigated, and the capsule closed with silk. No drainage was used and a plaster dressing was applied. In one week the stitches were taken out and after the first dressing daily manipulation was given. Function was restored two weeks after operation. Patient has since gone to pieces generally. There has been a recurrence of the eye symptoms, and swelling in the knee has been intermittent or in a nine-day cycle, one knee being swollen when the other is not. After the operation only one cycle was interrupted.

Pathology.—Many papillary tags, soft tissue. Hardened in alcohol.

Histology.—Branching papillary tags. Base composed of fibrous fat tissue in which are numerous large blood vessels. Fat tissue edematous. In places bands of fibrous tissue, some old and dense, others showing many fibroblasts, *i.e.*, proliferating connective tissue. Outside and extending from this case a stalk of fibrous tissue covered with very vascular, almost angiomatous tissue on the surface of which are leucocytes and fibrin. The stalk itself is dense fibrous tissue, and projecting from the side of the stalk are small circular or irregular vascular areas like apples on a stem. These areas consist of very numerous blood vessels practically angiomatous with great infiltration of leucocytes and some fibrin on the surface. Parts of the areas show fibrinoid degeneration, with, at times, marked necrosis. Specimen hardened in alcohol and not satisfactory for examination. Many arteries show a well marked proliferation of connective tissue in the intima. Fibrin stain shows that most of the material of the papilla is dense connective tissue with some fibrinoid degeneration in places.

Case No. 4.—March 12, 1900. J. D., female, twenty years of age. Diagnosis, rheumatoid arthritis. Her family and past history are negative. Swelling in hands and feet and later in knees occurred three years ago, with no pain, limitation or locking. Function was still good but the trouble was increasing. The knees and ankle-joints were involved. They were swollen in appearance, with the full amount of motion, boggy on palpation, and were not tender. An incision on the inside and on the outside of the right knee was made. The capsule was much thickened, containing a large amount of serous fluid. There were many calcareous deposits in the synovia, attached to the synovial membrane, not arborescent in shape, very vascular, and purplish in color. The capsule was closed with silk. The general postoperative condition was good, and the stitches were taken out in nine days. Hot fomentations and flannel bandages were applied. A second operation was performed on February 25, 1901, both right and left knees being again swollen and painful on motion. An incision on the inside of the right knee revealed considerable gelatinous fluid, and numerous fringes, some cartilaginous. Irrigation with hot water; silk sutures for capsule closing. In seven days the stitches were taken out, and one week later the knee was somewhat painful, but it bent easily. In January, 1903, motions were normal, and there was very little swelling. The capsule seemed soft but not adherent. Both wrists now gave the patient some trouble, but the general health has greatly improved and no new joints have become involved.

Pathology. — Microscopically the specimen shows an enclosing lining of a single layer of thin endothelial cells within which is a stroma of connective tissue of normal appearance infiltrated in irregular areas of varying size with small round cells, and abundantly supplied with small vessels filled with blood. Advancing farther inward, the connective tissue becomes looser and more feebly staining, often showing granular degeneration, and the walls of the vessels show thickening. Fat cells are present only in a few isolated groups. Most of the central portion of the fringe is occupied by true osseous tissue, reached by a gradual change from fibrous tissue cells.

Case No. 5.—April 25, 1900. F. B., female, aged twenty years. Diagnosis, rheumatoid arthritis. Her family and past history are negative. The exciting cause of her present illness was trauma. The onset occurred ten years ago, and there have been some symptoms ever since. Four months ago she had a fall and she has since been unable to bend her knee or walk without crutches. There has been periodical pain, especially on walking and on manipulation, together

with swelling, but no locking. Patient walks with crutches and condition is not improving. Upon examination the right knee-joint was found to be involved, with slight swelling, and marked grating on manipulation. Manipulation also caused marked pain. An incision was made on the inner side of the right knee. The capsule was found to be thickened, though not markedly thrown into folds. The cartilages were much atrophied and eroded, and a portion of the thickened synovial membrane was removed for examination. The fringes were vascular and quite fibrous. No hemorrhage occurred. The capsule was closed with silk. No drainage: plaster dressing was used, and later the leg was put in a leather splint. The stitches were taken out in seven days. There was marked relaxation of the joint motion (passive), and it did not come back to active or voluntary motion for over a year, and then to only within about 20° of complete flexion. Normal extension was secured, and when last seen in 1902 the patient could walk very little without a cane or crutch, though she had been able to discard her leather splint. Voluntary extension was then possible.

Pathology.—Microscopically the section of a fringe shows an enclosing lining of endothelium, formed by a single layer of cells, and within, normal connective tissue infiltrated to a very slight degree by small round cells and abundantly supplied with thick-walled vessels. Progressing from the periphery, the connective tissue becomes more and more displaced by fat cells, and the vessels, which are very numerous, show changes of obliterative endarteritis. In areas of varying size there is almost pure adipose tissue, with intersecting striæ of connective tissue.

Case No. 6.—August 10, 1900. J. G. M., male, thirty years of age. Diagnosis, joint syphilis. The exciting cause of his present illness is not known, the date of the onset being one and one-half years ago. The knee is not painful, and motion is free, but swelling is present and locking of joint occurs on getting up from a chair. There has been continuous swelling varying in amount, and profuse local perspiration. The left knee joint is involved. A spindle-shaped swelling appears, with a circumference over the patella 1¼ inches greater than in the right knee. The arc of motion is complete, palpation of fringes doubtful, and no tenderness present. On September 4, 1900, an incision was made on both sides of the patella, and the capsule, especially the synovial membrane, was found to be thickened. It contained one ounce of clear serum. The cartilages were somewhat eroded on the outer side. A very great number of fringes were found attached generally over the membrane, arborescent, very vascular, dark purple and soft. The capsule was closed with silk, without drainage, and a plaster dressing was applied. The postoperative treatment consisted of hot bathing, bandaging, etc. The swelling persisted. On November 19 there was an evacuation of fluid by incision. Four months after operation there was no swelling, no limitation and complete function, but the circumference remained one inch larger than the other knee. Eighteen months after the operation, July 20, 1902, the permanent flexion was 20°, the swelling was marked, with discharging sinus of a few days' duration. The X-ray showed marked disintegration of patella with erosions on tibial condyles and crest. Specific treatment was followed by diminution of swelling and increase of joint motion, and increase of general weight. In December, 1902, a typical syphilitic ulcer appeared over the upper portion of the tibial crest, which had undermined and eaten out edges. Purulent discharge. Specific treatment was continued with great general improvement, though the ulcer persists.

Pathology.—Specimen consists of two hypertrophied synovial fringes from the knee-joint, the largest 3 cm. in length. Both of a dark purple color and very vascular, much lobulated, and irregular in outline. Microscopical. Specimen consists of connective tissue generally interspersed with fat cells. This in spots has almost entirely supplanted the former tissue. Throughout the specimen are a great number of vessels, for the most part of small size, whose walls are always thickened and whose lumina are often obliterated. Moderate amount of round-celled infiltration throughout, with three definite nodules of small round cells.

Case No. 7.—March 7, 1901. G. W., male, aged thirty-seven years. Diagnosis, trauma. The exciting cause of the present illness was a severe wrench of the right knee, with acute synovitis in a football game seventeen years previously. The onset of present symptoms began five years later with an occasional locking of the right knee and pain, with swelling following locking, and subsiding after rest. Extension was incomplete, and although locking occurred, there was normal motion on manipulation with but little pain. Swelling and pain followed moderate use. In the past year the left knee has also been slightly swollen without known cause. The right knee-joint was involved, the left also to a less extent. The right knee was much swollen and distended in appearance, and flexion was slightly limited. Nothing was palpable because of tension, except a few osteo-arthritic nodes on the inner edge of the femoral cartilage. Measurements: Circumference over right patella, five-eighths of an inch larger than left, 2 inches above patella, right 1⅛ inches larger than left. Operation: Incision over the inner aspect of the joint was made. The capsule was very thick and vascular, and there was a bony spur covered with cartilage projecting one-eighth of an inch upward on margin of tibial condyle. There was a large amount of fluid. The fringes were very numerous and small, attached to the synovia, vascular, and of quite firm consistency. These and the bony spur were excised. There was no drainage and the joint was dressed in plaster for two weeks. Union per primam. Recovery was good and stitches were taken out in a week. Ma-

nipulation was performed immediately afterward, with one manipulation under gas one month later. One year later motion was a complete arc, with no swelling or pain and an excellent functional result.

Pathology.—Specimen consists of a score of hypertrophied synovial fringes varying in size from round tabs 0.5 cm. in diameter, and with very small pedicles, to irregular lobulated masses, covered with fringe-like processes, from 2 to 3 cm. in diameter. These tabs of tissue are of a fatty consistency and are yellow-white in color. Microscopical. Specimen consists of a cross section of a hypertrophied fringe. The cortex is of fibrous tissue containing many small round cells. The medulla consists of connective tissue cells staining well in some places, in others showing no nuclei, leaving the fibers thinned and separated. From this it merges apparently into fat cells which occupy much of the space. Round cells infiltrate the whole, especially in and about the cortex, where they are arranged in definite nodules. Many vessels are scattered throughout, their walls thickened, and their lumina in many places entirely obliterated.

Case No. 8.—April 7, 1901. E. M., male, fifty years; paperhanger. Diagnosis, rheumatoid arthritis. His family and past history are negative. The exciting cause of his illness is not known. The onset occurred in the ankles three years ago. He has pain, especially in walking, swelling, no locking, is unable to walk any distance, and the trouble is growing worse. The general examination is negative; the ankles, fingers, wrists and elbows are involved. Spindle-shaped swelling; lateral motion of ankles is limited almost entirely. Fringes can be felt below and in front of the outer malleoli, and the joints are quite tender to deep pressure. Incision was made in both the inner and outer side of the ankle-joint. The capsule was thickened and vascular, and fibrin was found especially in tendon sheath opened by outer incision. Fringes were numerous on the inner side of the ankle, attached to the synovia, papillomatous in shape, with an abundant blood supply, congested, and purplish in color. Their consistency was firm in some cases and soft in others. Soft dressing was used. The general postoperative condition was good, and the stitches were taken out on the seventh day. Six months after the operation, the last time the patient was seen, he could walk very much better and without pain. Motion in ankle had improved and no new joints were involved. He was improving in general health.

Pathology.—Specimen consists of two synovial lipomata, the larger 4x2 cm., rather flat, of a fatty consistency and a yellowish white color; from the ankle joint. Microscopical. Cross section of a synovial fringe, including a small portion of cortex. This cortex consists of fibrous tissue infiltrated with round cells, which in places form definite nodules of densely packed deeply staining tissues. The remainder of the section consists of areas of connective tissue and adipose tissue. Numerous thick-walled vessels throughout the former. The latter is, in areas homogeneous, unbroken by connective tissue, except for an occasional vessel, its lumen entirely obliterated.

Case No. 9.—April 11, 1901. F. B. F., male, twenty-five years of age; a pattern maker. Diagnosis, rheumatoid arthritis. His family and past history are negative. Five months ago occurred the last exacerbation of an old trouble with knees dating back thirteen years. The cause of the trouble, which occurred in November, 1900, was not known. Its onset was gradual, accompanied by soreness, but no swelling. Limitation was present, but no locking, and the function was considerably diminished. The trouble took the form of an alternate swelling first in one knee and then in the other, and for treatment moderate use of joints with splints at intervals was prescribed. General condition good. Knees, wrists, elbows, ankles and shoulders were the joints involved. He had two-thirds of normal flexion in knees and within 15° of complete extension. The capsule of the knee was clearly outlined by swelling and was tender to the touch. In October, 1902, a double lateral incision was made in both knees, showing the synovial layer much thickened and very vascular, containing no excess of fluid and some fibrinous clots. There were a large number of fringes with a synovial attachment, arborescent, very rich in blood supply, of dark reddish-purple color, and mostly soft, but some were fibrous. No hemorrhage occurred and ligatures were not used. The wound was irrigated and the capsule closed with silk, not drained, and dry dressing, but no plaster, applied. The postoperative treatment consisted of tonics and massage. In one week the stitches were taken out and the joint manipulated, and after that manipulation was given daily. In two weeks motion was better than before the operation, as just before the operation the patient could not extend the knees within 45° of straight. In May, 1903, manipulation was possible to within 20° of complete flexion, and 15° of complete extension. There was a slight swelling of the knees and considerable soreness. In the knees the result has been a marked improvement in function, but they are still painful. There is very much less swelling. Thegeneral disease has, however, been extending, and other joints are worse.

Pathology.—Specimen consists of a score of hypertrophied synovial fringes from the right knee-joint, internal aspect as well as external. They are of varying shades of purple, and consist as a rule of long slender pedicles from the distal end of which start numerous fringe-like processes, 2 to 3 cm. in length, fine and delicate, and very soft. In addition several large white masses of fibrin, the longest 7-10 cm. in length, also irregular in shape and with long narrow processes. Microscopical. Longitudinal section of hypertrophied bulbous outgrowth. Periphery consists of a densely packed layer of very small round cells to the exclusion of other tissue. Medullary portion composed of adipose tissue, with

some small areas of fibrous tissue, traversed by numbers of vessels cut longitudinally, radiating from base to cortex. No apparent endarteritic changes. Specimens from left knee of similar character.

Case No. 10.—September 10, 1901. A. A. E., female, aged forty-three years. Diagnosis, osteo-arthritis. The patient has been troubled for many years with pronated feet and has worn plates. No cause is known for her present illness, but for several years on rare occasions has had a catching sensation in right knee. Acute onset of symptoms occurred six months ago, attended with pain and, during the past month, swelling. There has been no limitation of motion, but a catching in the right knee, referred to inner lower edge of patella. Patient walks with a limp and the course of the trouble has been progressive. Examination shows both knee-joints to be involved, the right knee swollen one inch larger than the left above the patella and three-quarters of an inch over patella. The motion is normal but guarded. A diffuse swelling present, but no fringes palpable. Joint is tender on pressure. Two operations were performed on both knees, the first in December, 1901, and the second in March, 1902. An internal lateral incision showed that the capsule was much thickened and congested, with no excess of fluid. Very numerous fringes from the whole membrane, the largest about the lateral edges of the patella and the ligamentum alae, were attached to the synovia. These were very vascular, purple in color and soft. There was also an osseous ridge on the femur. A considerable hemorrhage took place. No ligatures or irrigation. The capsule was closed with silk, not drained, and plaster dressing applied. The general postoperative condition was good, and the stitches were taken out in seven days. Later one knee was manipulated with ether, and bandages and applications were used in treatment. Function was regained slowly. In October, 1902, the arc of motion was normal, the swelling slight, walking somewhat painful, but the functional result good.

Pathology.—Difficult to exactly orient position of tabs, but usually can make out broad base and edematous and vascular tabs projecting into joint. Base consists of closely interwoven bundles of very dense fibrous tissue in which are a very few spindle-shaped nuclei. Among the fibers are often seen small groups of large oval or round spaces—fat spaces—with at times very large, rather thick-walled blood vessels. About this dense base, *i.e.*, toward joint surface, is a layer of less dense and more vascular tissue, forming either rounded or sessile projections into the joint, or long finger-like papillæ. The layer of tissue between the very dense base and the projections consists of very edematous tissue, in which are fat spaces of large size, and many relatively young blood vessels. In this edematous fibrous tissue are a considerable number of lymphoid and plasma cells. Blood-vessel walls are quite thick and show considerable infiltration with lymphoid cells. The layer of edematous fibrous tissue may form a layer between the dense base and the surface of the capillary growths, or may extend into the finger-like papillæ to form a central stalk. At times the infiltration of lymphoid cells about the blood vessels is very marked. Rarely in a long papilla is a small area of osteoid or osseous tissue. No definite endothelial layer can be made out. The surface layer consists of a layer of closely packed cells, with oval or round nuclei and much intercellular fibrillar material, and no sharply defined protoplasm (fibroblasts). The superficial layers of the papillæ often are very vascular. Sometimes on joint surface of tabs is considerable fibrinous exudate. Sometimes base contains much fat tissue.

Case No. 11.—December 19, 1901. H. L. F., male, twenty-four years of age; student. Diagnosis, osteo-arthritis. His family and past history are negative. The onset occurred seven years ago, with swelling of feet and ankles. The patient felt pain after standing a long time; limitation; no locking; and the trouble was chronic. The treatment consisted of splints and plates. The left ankle joint was involved and had a swollen appearance about the external malleolus. Varus, only a partial correction of which was possible, and tenderness were apparent. On December 21, 1901, an incision was made over the peroneal tendons and calcaneo-cuboid articulation. Two or three fringes were found attached to the synovial membrane, irregular in shape, vascular, reddish purple in color, and of a soft consistency. The fringes and osteo-arthritic ridges were excised through an incision over the calcaneo-cuboid articulation. The osseous spur came from the cuboid. There was no draining and a soft dressing was applied.

The patient has walked freely and without pain ever since convalescence was fully established, *i.e.*, four weeks after the operation. He has had no trouble since in this foot.

Pathology.—Tabs of soft tissue consist of very vascular and dense fibrous tissue with, in places, small circular areas of lymphoid cells. Also fat tissue, in places infiltrated by much fibrous tissue.

Case No. 12.—January 4, 1902. A. F. G., young married woman. Diagnosis, relaxed joints, sudden increase of weight. Negative family and past history. The onset occurred immediately after confinement, June, 1901. Patient had pain and disability in right knee, followed by similar pain in left knee to less extent, with pain, locking, and painful walking. Following rest in bed, there was a disappearance of pain and symptoms, which have reappeared recently, coincident with pregnancy. Plates and strappings were applied. Patient is a large, stout woman, with pronated and relaxed feet. The knees, especially the right, were found to be involved, and in appearance there were soft, fatty, irregular masses to be felt. The amount of motion was nearly normal, and deep, freely movable fringes could be palpated. There was tenderness over the outer side of the joint. On April 25, 1903, an incision was made on the outer aspect of both knees. The capsules were nearly

normal, except over the bases of the fringes where they were somewhat thickened. There was no excess of fluid or fibrin. Two fatty masses were found, each 4 cm. in diameter, on the outer aspect of the joint, extending below the patella, attached to the synovia by a pedicle, but also loosely attached over the entire base. They were irregular, flat, sessile, with an abundant blood supply, yellow-red in color, of a fatty consistency, but with some fibrous resistance. There was also a large succulent fringe from below the patella. No ligatures or irrigation. The capsules were closed with silk. No drainage, and soft dressing. The stitches were taken out on the seventh day. Daily active and passive manipulation was performed. Hot and cold douching and flannel bandages. On May 13, 1903, the amount of motion in the right leg was a right angle and within 10° of a right angle in the left leg. Swelling was slight, with no pain, and on this date, two weeks after the operation, the patient was walking very well.

Pathology.—Specimen consists of two irregular, lobulated masses of tissue, 4x2.5x2 cm., and 4.5x3.5x1.5 cm., respectively, and one smaller, 2x1.5 cm., of fatty consistency, yellow or grayish-white in color, with some portions of reddish hue. Over portions a thin fibrous coat remains, resembling the superficial layer of synovia. The growths are sessile and against joint wall lies a broad base of yellow fatty nature. One portion of each, resembling a pedicle, and probably the original point of union with synovia, contains visible vessels, and considerable fibrous tissue. Similar smaller tab. Microscopical. Specimen consists of a thin cortex of fibrous tissue infiltrated to a considerable extent by small round cells, within which is a broad layer of normal fibrous tissue interspersed with very numerous small vessels filled with blood and with marked surrounding round-cell infiltration. The remainder of the section is composed of normal adipose tissue, interspersed by irregular striæ of fibrous tissue, especially about the vessels which are very numerous, many of considerable size, and all having marked endarteritic changes; walls greatly thickened. In smaller vessels is entire obliteration of lumina.

For Cases 13 to 16 see *Boston Medical and Surgical Journal*, March 19, 1903.

Case No. 17.—April 22, 1902. C. W. W., female, forty-nine years of age. Diagnosis, relaxed joints. Patient has a history of nervous prostration six years ago. Her present illness began in July, 1901, the exciting cause being a twist of the knee on alighting from a carriage. This was accompanied by pain, swelling, no limitation of arc but with locking and limited function. Patient had been treated with electricity, massage, strapping, heat, etc. A very heavy woman; both knee joints swollen, especially below the patella, and on either side of the patellar tendon. Motion was quite free, fringes could be felt, and there was no tenderness. On April 2, 1903, an incision was made over the outer side of both knee-joints. In the left was found fatty degeneration of a portion of the membrane en masse. There was no excess of fluid and no fibrin and no general villous enlargement. The lipomata were attached to the outer upper aspect of both joint cavities, were irregular and flattened in shape, and supplied with blood from the synovia. They were yellow in color and of a fibrolipomatous consistency. The hemorrhage was slight. Ligatures and irrigation were not used and the capsule was closed with silk. The wound was not drained and a soft dressing was applied. A good recovery followed and the stitches were taken out in one week. Neither manipulation nor bandages were necessary, for the patient recovered her motion voluntarily and function was restored in two weeks. In May, 1903, the amount of motion was normal, with no swelling, but some soreness, and an excellent functional result.

Pathology.—Three fatty masses, lobulated, sessile and attached to synovial membrane by a pedicle; irregular in shape and lobulated, gray-red with streaks of red, the largest 8x2.5 cm., the second 3x2, the third much smaller. Fatty fibrous consistency. Microscopical. A very thin cortical layer of connective tissue densely infiltrated with small round cells, the endothelial lining occasionally apparent. The bulk of the section occupied by adipose tissue with irregular striae of feebly staining connective tissue and numerous vessels in varying stages of obliterative endarteritis.

Case No. 18.—May, 1902. J. W. B., male, forty years of age. Diagnosis, trauma. The patient has a history of rheumatism in the knees ten years previous. In November, 1901, he struck his left ankle with a hammer, and pain and swelling of ankle with limitation of motion immediately followed, without locking of joint. Patient walks with crutches and the trouble is progressive. The left ankle-joint is involved, thickened in appearance, about the malleoli and in front of the peroneal tendons. Motion is limited. Position of valgus. Fringes could be felt rolling under the palpating finger and were somewhat tender to pressure. An excision of the fringes was made, incisions being above and below the malleolus, parallel respectively to tendons of tib. anticus and peronei. The capsule was much thickened and very vascular, and contained no fluid or fibrin. There were several fringes attached to the synovia, profusely supplied with blood, and of a soft consistency. The treatment consisted of irrigation and curettage, with silk to capsule, no drainage, and plaster dressing. Healing per primam and an excellent functional result. There has been a recurrence of the trouble in the knees. No histological examination of the specimen was made.

For Case 19 see *Boston Medical and Surgical Journal*, March 19, 1903.

Case No. 20.—June 19, 1902. O. L. P., female, aged fifty-seven years. Diagnosis, osteo-arthritis. Her family and past history are negative except for some fleeting rheumatic troubles. The ex-

citing cause of her present illness is an injury to the left knee four years ago when patient sat for over an hour with her left knee curled under her. This was followed by pain, swelling and impaired function without locking of joint. Knee has troubled her ever since to a greater or less degree. No systematic treatment was used. On general examination some slight evidences were found of osteo-arthritic changes in hands. The left knee-joint was involved and appeared swollen below the patella on the inner side. Motion is possible to a right angle in flexion, 10° less than normal extension. A fringe is palpable below the patella and on the inner side, with tenderness over this area. A lateral incision was made over the inner side of the knee, which revealed a normal capsule with no excess of fluid and no fibrin. There was one fringe from the lig. alæ on the inner side, irregular in shape, with a blood supply from the synovial membrane; pale in color, firm and fibrous in consistency. No hemorrhage occurred, no ligatures or irrigation. The capsule was closed with silk, was not drained; dry, soft dressing, no plaster or splint. Massage and tonics were prescribed. In one week the stitches were taken out and manipulation was given. Flannel bandages were also used. Two and one-half weeks after operation 50° of motion were obtained. In May, 1903, the amount of motion was a right angle, with no swelling or pain, and a very good functional result.

Pathology.—Three small synovial tabs, the largest 1.5 cm. in length, with a broad base and tapering out in tongue-like projections. Smaller tabs similar; grayish-red color. Microscopical. Only a small amount of the cortex present, which shows, however, a thin endothelial lining, with connective tissue basis, dense round-celled infiltration, and numerous thick-walled vessels. The interior portion of the growth consists of adipose tissue, bands of irregularly arranged connective tissue, and vessels in large numbers. The larger have thick endarteritic walls, and the smaller are for the most part occluded, and there are numerous vessels of very small size cut longitudinally, which also show occlusion.

Case No. 21.—August 24, 1902. J. P., female, twenty-three years of age. Diagnosis, acute arthritis. She has a history of abdominal pain, weakness and leucorrhea of two years' standing. There is no known exciting cause for her present illness, the onset of which occurred thirteen months ago, with swelling of the left knee. Four weeks later the leg suddenly gave out under her and she was in bed with an attack of monarticular arthritis for twelve weeks. The trouble is accompanied by swelling, slight limitation, locking, and the patient walks painfully and with a limp. The condition remains stationary. Counter irritation and massage were prescribed. Patient very neurotic. The left knee-joint was involved, swollen in appearance, 2 cm. greater than the right, with 120° of flexion, fluctuating and hot on palpation. Marked tenderness existed. On August 27 an incision was made over the outer aspect of the joint. The capsule was thickened and 20 c.c. of turbid fluid were found. There were several small fringes, two of which were removed, each about 2 cm. long. These were attached to the synovial membrane, were tongue shaped, had a marked blood supply, and were soft to fibrous in consistency. Slight hemorrhage. No ligatures were applied and treatment consisted of hot corrosive irrigation, with a silk capsule closing, no drainage, and dressing of plaster in extension. The general postoperative condition was fair and the stitches were taken out in eight days, and manipulation was given at the same time, with split plaster, flannel bandages, etc. After the plaster was omitted the leg became painful with a tendency to flex at the knee. A caliper splint was applied in October. At this time a similar attack in the right knee was treated with plaster cast and rest. Symptoms greatly decreased in three weeks when the patient was discharged. Patient has not been seen since.

Pathology.—Specimen consists of an hypertrophied fringe from the knee-joint, anterior inner aspect, very vascular, purplish in color. Microscopical. Bulk of section consists of normal connective tissue. In a few places there are areas of round-cell infiltration which is not, however, general, and there are one or two small lumps of fat cells, with occasional vessels scattered throughout the tissue. There is no evidence of hypervascularity.

Case No. 22.—September 3, 1902. K. F., female, sixteen years of age; saleswoman. Diagnosis, acute arthritis. Patient has had a recent history of gonorrhea. There has been no trauma. The onset of the present illness occurred one month ago with acute painful swelling of the left wrist and hand, followed immediately by pain and swelling of right knee. There was sharp pain, marked swelling, complete limitation in flexion, no locking, and patient was unable to use leg. The symptoms increased in severity, and rest in bed, with local applications was prescribed. On general examination the patient was found to be thin and anemic, with irregular temperature, up to 102° F. The right knee-joint was involved. In appearance it was symmetrically swollen, flexed 30° and abducted. Circumference 6 cm. greater than the left. Patient had great pain and muscle spasm on attempted motion, attended with fluctuating palpitation and marked tenderness. On September 8 an incision was made over the inner aspect of the right knee. The capsule was very thick and vascular and contained considerable fluid with fibrin flakes and blood clot. The fringes were small and few and the synovial surface mostly smooth. These fringes were attached to the synovial membrane, were tongue shaped, had a marked blood supply, were reddish-purple in color, and of soft consistency, but with resistance of fibrous tissue. A slight hemorrhage occurred. No ligatures were used, but hot corrosive irrigation was tried, and the capsule was closed with silk. No drainage. Plaster in extension. The general postoperative condition was fair and the

stitches were taken out in eight days. The knee was very tender to manipulation and the patient hysterical. The treatment consisted of continuous daily manipulation with or without ether, split plaster, hot fomentations, flannel bandages, and regular massage later. In March, 1903, the arc of motion was complete to within 10° of complete extension, with no swelling or pain, and an excellent functional result.

Pathology.—Specimen consists of two hypertrophied tabs of synovial membrane, taken from the lower inner aspect of the knee-joint. The larger is 2.5 cm. in length. All are of a dark purple color and very vascular. Very soft and yielding in consistency. Microscopical. Connective tissue throughout, with general slight small round cell infiltration which in places becomes more dense. Vascularity marked but no endarteritic changes apparent. No adipose tissue, or scattered fat cells present.

(To be Continued.)

TREATMENT OF TAPEWORM.*

BY SAMUEL P. GERHARD, M.D.,
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In the treatment of tapeworm there are three species most commonly met with. They are the beef tapeworm or *Tænia saginata,* the pork tapeworm or *Tænia solium* and the broad tapeworm or *Bothriocephalus latus.* The beef tapeworm occurs more frequently in this country than in the others, while the pork tapeworm and the broad tapeworm are comparatively rare. The manner in which they find lodgment in the intestines of the human being is now so well understood, that the means of prophylaxis, both on the part of the individual and the government are so simple and effective that they need merely be mentioned here.

On the part of the individual, the means of prevention are to see that all meats are properly and thoroughly cooked before being eaten; and on the part of those who by occupation are required to handle meats, perfect cleanliness in every respect should be the rule. The regular and systematic inspection of cattle that are set aside for food purposes, and the meat after it is prepared for the market, should be rigidly carried out by the government.

By these means the prevalence of the disease is greatly lessened and reduced.

The worm is exceedingly difficult to remove and the half dozen or more remedies that are useful are more or less efficient. They are administered regardless of the particular species of tapeworm, so that we need only consider the treatment as applied to all.

There is probably no branch in the practice of medicine that has been carried on more successfully by the fakir and the advertiser than the removal of tapeworm. This class of practitioners seem to meet with much success and there is no doubt but that they do apply their remedies to remove the worm surely. At one time this work was almost entirely in the hands of non-professional persons, or so-called worm doctors, who applied their apparently secret remedies for large fees.

As for the regular practitioners, we have in our possession several good and efficient drugs, and the best one is probably the ethereal extract of male fern. However, the selection of a remedy is a matter of preference and experience and depends chiefly on the purity of the drug used and the method of administration.

The preparation of the patient is a most important matter and requires to be carefully and completely carried out to effect an expulsion of the worm.

Most authorities agree that twenty-four hours before the administration of the medicine the patient should be required to fast and have the bowels thoroughly emptied and washed out by means of purgatives. This allows the drug to come in direct contact with the parasite without the interference of food that may be in the bowel.

Besides the male fern just mentioned, we have a powerful vermifuge in the drug Kooso, the dried flowers and immature fruit of the *Brayera anthelmintica,* a tree of Abyssinia. These two drugs have been used from time immemorial and have done good service.

Kooso, however, is liable to produce severe nausea and vomiting in some cases.

The bark of the root of the pomegranate is also efficient, together with its alkaloid, pelletierine, named in honor of the chemist Pelletier.

These are very unpalatable drugs and may cause toxic symptoms in doses large enough to be effective.

Oil of turpentine, at one time was much used and is very powerful but on account of the difficulty of administering it and its nauseating taste, it is very little used, except as a last resort. It must be combined with castor oil to be of any active use and the quantity used is two ounces of oil of turpentine with four of castor oil; together we have a horrible dose, enough to scare our patient from us.

Kamala is a very active drug but is not often used, for the reason that it causes nausea and vomiting.

A very valuable remedy is pumpkin seeds, especially in children. It is harmless and easily taken when powdered and mixed with sugar. Others can be mentioned, but they are not as certain in their action and are more unpleasant than those named.

The whole worm must be expelled with its head and segments, entirely and completely, or it will develop again in from six to eight weeks, for if the head still remains in the intestines it will be necessary to repeat the treatment on the appearance of the parasite.

The great drawback to nearly all the methods of treatment in this condition is the large doses of medicine required and the loss of time to the

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patient from his occupation during its application. In looking over some of the formulæ that are highly praised and which seem to be largely used by many regular practitioners, we find the dose measures a pint or more of a bitter and nauseating mixture which has to be taken at one or two draughts.

In delicate, weak and debilitated patients this is a serious matter and the treatment then becomes almost barbarous.

In these days of elegant pharmacy and improved methods of administering drugs, there is no need to hold on to the old, yet efficient, methods but turn our attention to applying these same old remedies in a better and much more acceptable form.

To this end I have found a combination of two of the drugs mentioned, namely male fern and pelletierine, most suitable and applied in the following manner:

There is no necessity for the patient to make several days' preparation. The loss of one meal—breakfast—is all that is required. In many cases the most convenient day to select for giving the medicine is Sunday, for the reason that most patients are at leisure at that time.

Instruct the patient to clear out the bowels the day previous, with one or two large doses of castor oil or salts. One dose may be given in the morning and one at night, an hour or two after a light supper.

The next morning, as early as possible, say at six o'clock, give at one dose a pelleterine tannate, 20 grains, in two capsules. When this has operated freely, in about two or three hours begin with the following:

R Olii resinæ *aspidii*.....3ii
Aetheris.....3ii
Hydrargyri chloridii mitis.....gr. xii
M. et div. in capsulæ No. xvi.
S. Two every ten minutes.

Of course it is understood that no food is taken during this time. In about two or three hours the worm will be expelled whole, with its head fastened to its neck.

Recently, in seven cases, I have found this method to give successful results without any recurrence. It is generally difficult to find the head on account of its small size and one cannot give assurance that there will not be a return of the parasite unless the head is found, or after the lapse of six or eight weeks when no segments are found in the stools.

It is well to instruct the patient to pass all bowel movements into a vessel of warm water on the morning the medicine is taken. In this way the worm can be secured when it is passed and saved for examination. No traction on the protruding worm should be permitted for fear of tearing the head off and losing it.

The patient can then rest and if there is any depression light food may be allowed. This depression is slight and I have never known it to last longer than two hours.

X-RAY TREATMENT OF CANCER OF THE UTERUS. METHOD AND RESULTS.

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The term X-ray treatment is used to emphasize the author's belief that the X-ray is the only form of radiation likely to do much good for these cases. The ultraviolet ray is all right in its place, but that is only for lesions which are less than skin deep and no matter what kind of speculum is used the ultraviolet ray is not going to penetrate the tissues of the cervix sufficiently to influence a cancer of that part. As we know, even for lupus we have to blanch the skin to secure sufficient penetration for even this cutaneous affection. With all the infiltration which takes place about the cervix the ultraviolet ray seems to the author practically useless.

For applying the X-ray a prime requisite is a good examining table with leg crutches for a lithotomy position. The patient lies on her back with her hips at the edge of the table, the thighs vertical and legs horizontal, resting on the crutches which are about 18 inches high. A sheet covers everything but the vulva and after the speculum is introduced sheet lead is spread over the buttocks and thighs to protect them from the X-ray. The speculum most generally useful is Nott's. It is of metal and of the general shape of a bivalve speculum with a duck-bill posteriorly, but with two narrow arms anteriorly which spread apart as they are both separated from the posterior blade. The tissues most usually involved along with the uterus are reached through the anterior vaginal wall in this way. The specula, Ferguson's, made of celluloid are transparent to the X-ray and are desirable for some cases with extensive infiltration.

The X-ray tube ought to be a large and powerful one—the author's are all of 40 cm. capacity, *i.e.*, intended for use with a current producing a 40 cm. spark, and should be of medium hardness. By hardness I mean a high degree of vacuum and all the best tubes are provided with an arrangement whereby the gaseous contents of the tube may be added to when the tube becomes too hard. For these cases the tube and the current should be so adjusted that the bones of the hand may be faintly seen at a distance of two feet from the tube. The author uses a coil with a liquid interrupter to excite the X-ray tube.

The distance ought to be about nine inches from the anticathode, the disk in the center of the tube from which the rays radiate, to the nearest exposed surface; and for a beginning exposure the time ought not to exceed five or six minutes of actual X-radiation. This will probably have to be interrupted once or twice to allow the tube to cool. The time is generally increased at subsequent treatments until finally this part of the treatment takes twenty minutes, during nearly half of which the X-ray is actually shining.

The second part of the treatment is required for

those cases, and they are the usual ones, in which there is a fibroid or other tumor of the body of the uterus.

The patient may be sitting up and the X-ray tube is placed about nine inches from the surface and directed at the tumor right through the abdominal wall. It is rather better to have the surface of the abdomen uncovered, so that we may judge of the condition of the skin, it ought to become somewhat tanned after repeated exposures, but burns and ulcerations do not seem to do anything but harm. The time of exposure here may be about nine minutes, distributed over different portions of the lower abdomen.

The third part of the treatment consists in the application of the high tension discharge by means of vacuum electrodes. From one pole of the X-ray coil a rheophore passes to an insulated handle in which there is a metallic socket and in this is fitted a vacuum tube with a bulbous extremity. No connection is made with the other pole of the coil. The free end of this vacuum tube, essentially a Geisler-tube, is placed upon the surface of the abdomen over one of the painful spots and a current strong enough to produce a four-inch spark is turned on. The tube becomes filled with a series of waves of light passing from the rheophore down into the body of the patient and with absolutely no disagreeable sensation. In moving the vacuum tube from one part of the abdominal surface to another we try to keep it in contact with the skin, as otherwise the patient receives a shower of sparks which are more or less disagreeable. Then again, while this application is being made no one should touch the patient, as she is quite intensely charged with electricity and receives a spark from contact with anything that is a good conductor. The efficacy of these tubes is entirely out of proportion to the simplicity of their construction and application. Of course we know they have a coil behind them containing a hundred thousand feet of wire and capable of giving a voltage of a million. So, after all, it is not strange that they should produce very tangible effects.

The results which may be expected are wonderful. The vacuum tubes bring about complete relief from pain and the entire treatment results in a cessation of the discharge, disappearance of the odor, which in these cases is often most offensive, and a restoration to general health. The fibroid diminishes somewhat in size and the progress of the carcinomatous infiltration is arrested. Each treatment acts as a general tonic and the patients often declare that they would be treated every day if they could afford it.

The cases the author has treated or recommended treatment for in this way have been cases in which the surgical removal of the disease has seemed impossible, or has been unsuccessfully attempted. In these cases there has been a symptomatic cure. The author has as yet formed no opinion as to the possibility of a complete disappearance of uterine cancer under X-ray treatment.

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WHY NOT ABSOLUTE PRECISION IN CHYME ANALYSIS?

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With this article I intend to establish three facts:

First: That at present no better indicator is known for the quick and absolutely correct determination of free hydrochloric acid than is the supersaturated alcoholic solution of tropeolin oo. This solution is most excellently adapted for very accurate clinical purposes.

Second: That the dimethylamidoazobenzol as an indicator for only free hydrochloric acid in chyme is absolutely wrong, consequently misleading and hence causes mistaken diagnoses. But that as it reacts also on *very weak solutions* of organic acids it can be used for the quantitative determination of such acids; and

Third: That by the successive use of tropeolin, dimethyl and phenolphthalein in the same specimen of chyme we can determine, quantitatively, free hydrochloric acid, organic acids and the general acidity. My experiments regarding these questions I have published in my article, "Some New Facts in the Chemistry of the Stomach" (*American Medicine*, March 22, 1902). I experimented with the other known indicators, but could obtain no better combination or a combination equally as good. This combination has the merits of accuracy and practicability. The end reaction of each of these indicators is quite sharp.

The tropeolin solution is prepared by throwing into absolute or very strong alcohol an excess of the powder of tropeolin oo and leaving it stand for two or three days, during which time the solution is shaken up a few times. Such tropeolin solution is of a dark, cherry-red color, resembling the color of the tincture of iodine. Free mineral acids are colored a purplish red by a few drops of this solution.

That this tropeolin solution is absolutely reliable I have proven in my above-mentioned article. The results obtained with the tropeolin were corroborated first by Vollhard's method, and second by Günzburg's reagent. Whenever tropeolin showed free hydrochloric acid, Günzburg did likewise, and vice versa. To furthermore test the value of the tropeolin solution I have many times tested the chyme with Günzburg, after the end reaction was reached by tropeolin, but in each case with negative result. Again I tested the exactness of the tropeolin in the following way: Chyme was titrated with tropeolin as the indicator, *e.g.*, I got the end reaction corresponding to an acidity of 15. I then took another specimen of the same chyme and added the decinormal sodium hydrate to correspond to an acidity of 12. I now tested with Günzburg, which proved positive. I then added some more caustic soda to correspond to an acidity of 18; now Günzburg gave negative result. In this way, I believe, I have ascertained the undoubted correctness of the tropeolin solution as an indicator for free hydrochloric acid, this

solution giving exact results, neither too high nor too low.

To 5 c.c. of the filtered chyme are added two drops of the tropeolin solution. If free hydrochloric acid is present the stomach contents are colored a purplish-red, the intensity of which depends upon the quantity of the free hydrochloric. The titration is begun with the decinormal solution of caustic soda in the usual way. When the end reaction has been reached the contents in the beaker are of an amber color. While titrating it is best to look down upon the angle formed by the wall of the beaker with its bottom, and we continue to add drop by drop of the decinormal solution of the caustic soda until this angle shows no more red. Like everything else, this needs some practice, and for the purpose of practicing a solution of hydrochloric acid may be taken, the strength of which is previously ascertained with phenolphthalein. Knowing the strength of such a solution, another specimen is again titrated, using now the tropeolin as indicator. Exactly the same quantity of caustic soda is added as in the last specimen and the color of this and the reaction is carefully noted. Thus it is easy to make oneself acquainted with the end reaction of tropeolin. If but very little chyme is at our disposal we can ascertain the presence of free hydrochloric acid by dipping a piece of clean filter paper into the chyme and then drop one drop of the tropeolin on the wet filter paper, when the characteristic color will appear.

Now, as to the second proposition that dimethyl as an indicator for only free hydrochloric acid is absolutely wrong. In my original work (cited above) I have proven that dimethyl not only reacts on free hydrochloric acid, but also on very weak solutions of organic acids, nay, even on the weak solutions of acid salts, as on the acid phosphates of magnesium and of calcium. The strength of the organic acids with which dimethyl reacts comes entirely within the range of the normal acidity of the stomach, and not as it has been supposed, that dimethyl reacts only on strong solutions of the organic acids. Knowing these facts, how dare we advocate the dimethyl as indicator for only free hydrochloric acid? Why still advocate something admittedly not entirely correct when another reagent, absolutely correct, can be used just as easily? We have lulled ourselves into the belief that the amount of the organic acids in the chyme after a test breakfast, unless in dilatation of the stomach, is very insignificant. But this is not so. Neither is it true that there can be no large amount of organic acids when there is enough of free hydrochloric acid. I have proved in the table, given in my article, "Gastrosia Fungosa" (*American Medicine*, Jan. 10, 1903), that both free hydrochloric acid and organic acids nay, and in a very great many cases do, co-exist. In the great majority of the cases of hyperacidity the hyperacidity is caused by the organic acids only. Organic acids are very often present in large quantities to the exclusion of free hydrochloric acid. Dimethyl, in these cases, proves absolutely positive, and its index is then interpreted as that of free hydrochloric acid, which it is not. Whenever tropeolin proved negative, Guinzburg or Boas' solutions likewise proved negative, although the dimethyl gave the ordinary red color. This fact is exemplified in Cases IV, VI and IX of the table of my monograph lastly mentioned. And how easy is it to demonstrate the presence of the organic acids, a procedure which requires little apparatus and little time. A Straus separatory funnel and a narrow test tube constitute the apparatus, a 10-per-cent. solution of ferrichlorid and ether are the reagents. The entire process of demonstrating the organic acids consumes about two or three minutes. One c.c. of the filtered chyme is put into the separatory funnel and four c.c. of ether are added. The ether is then shaken up with the chyme to extract the organic acids. One drop of the 10-per-cent. solution of the ferrichlorid is added to two c.c. distilled water in a narrow test tube and upon it is floated the clear ether extract. At the plane of junction of the ether with the iron solution a colored ring appears which varies with the different acids as described in my original article. (One must be sure that only the clear ether extract is floated, as the floating of even a small quantity of chyme may simulate a somewhat yellowish ring.)

Wherever the dimethyl proves positive after the end reaction of tropeolin has been reached the floating test for organic acids should be applied to corroborate the presence of the organic acids. (This floating test does not react with the mineral acids or with the acid phosphates of calcium, magnesium, potassium and sodium.) The knowledge of the presence of organic acids is absolutely essential, as upon their ratio and their relation to the free hydrochloric acid depends the correct understanding of the case, and hence the correct therapy. The presence of organic acids in the chyme can also be ascertained through the microscope, by the presence of a large quantity of fungi. Here again we meet with the old supposition that in the presence of free hydrochloric acid there can be no microbes. It is about time that this nonsensical supposition, that so-called micro-organisms cannot coexist with free hydrochloric acid, be forever exploded. Anyone still asserting such imagination convicts himself of ignorance of the exact facts; such an assertion proves that its author is but little acquainted with the microscopic picture of chyme. As a matter of fact, I have grown pure cultures of the supposed micro-organisms among others, also in *free* hydrochloric acid. Alas, for the present pernicious theories and doctrines of bacteriology; how unfortunately so grand a study is still being misinterpreted.

From the fact that in the supersaturated alcoholic solution of tropeolin 00 we have, so far, the best indicator for free hydrochloric acid, and that the dimethyl reacts also on weak organic acids I have combined the two, successively, in the same specimen of chyme for the very easy and quick determination of both, free hydrochloric acid and of organic acids. And, after the end reaction of

dimethyl—a pale yellow color—has been reached we can add phenolphthalein for the determination of the total acidity and continue the titration until the characteristic carmine-red color appears. We are thus enabled to determine in the same chyme specimen, qualitatively and quantitatively, free hydrochloric acid, organic acids and the general acidity. The time consumed for such determination need not exceed ninety seconds to two minutes, a process surely rapid enough for clinical purposes.

Let me now review a few statements made since the publication of my above first-mentioned article.

A. L. Benedict (*American Medicine,* July 19, 1902) praises the dimethyl and wants us to be particular in observing the successive color changes from the red to light lemon-yellow. He advises us to watch the change of red into orange, which is supposed to be the end reaction for free hydrochloric acid, the subsequent transitions into pale yellow denoting organic acids. I wish it were so. While in many cases the addition of the dimethyl to the chyme, after the end reaction of tropeolin was reached, did give no other color but orange red, in many other cases the pure carmine-red color became instantly manifest. This depended simply upon the quantity of organic acids present. The greater the quantity the deeper red the color. The statement of Dr. Benedict that tropeolin gives too high readings is not borne out by facts. If one is thoroughly acquainted with the end reaction of the tropeolin he will find that the determination with tropeolin and with Boas' or Günzburg's reagents give identical readings. Dr. Benedict wants us to deduct as an "average" 15 per cent. from the reading at the end of the dimethyl reaction, to give us "a fair idea" as to free hydrochloric acid. Are we called upon to give "fair ideas" and "fair averages" or are we to give absolute facts? We are assured that the organic acids are due to fermentation: does it make no difference to know how far the fermentation has proceeded? Are we to assume as being immaterial whether we have only 5 per cent. or 80 per cent. of organic acids?

Charles P. Emerson (*Johns Hopkins Hospital Bull.,* January, 1903) recommends Congo paper as an "excellent" indicator for free acids. Unfortunately my experiments are against the correctness of such statement. Congo paper likewise reacts on organic acids; for instance, it gave a positive reaction with malic acid of as low an acidity as 20. He further says, where free acid is present, the amount of free organic acids *likely* to be present will not disturb results. I should like to refer to Case VII in the table of my article, "Gastrosia Fungosa" (*American Medicine,* January 10, 1903). This case shows free hydrochloric acid 26, and free organic acids 52. Of course, this is not the only case on my records. Dr. Emerson also says, that although it (Günzburg's reagent) is the most delicate test, the amount of hydrochloric acid indicated by it is less than by other indicators. There is excellent reason for that, because—the supersaturated alcoholic solution of tropeolin excepted—all the other indicators react as well with acids other than the free hydrochloric acid. Consequently, while Günzburg ceases to act after the neutralization of the free hydrochloric acid the other indicators still continue to operate on the organic acids.

W. F. Skillman (*American Medicine,* April 18, 1903) labors under the supposition that organic acids are to be suspected only when there is interference with the size, position and peristalsis of the stomach, to which I take exception. He also reiterates what has been said before him, that the dimethyl reacts on organic acids only when these exist in large quantities. Surely, I thought I had utterly disproven this misleading and erroneous contention when I demonstrated that organic acids of as low acidities as 15 reacted with dimethyl. He also argues, "Then we could suspect the presence of organic acids and could use the Günzburg or Boas reagent to determine whether our dimethyl reaction was caused by organic or inorganic acids." But suppose that both these acids are present simultaneously, does he then want to exclude the presence of organic acids because Günzburg and Boas give the reaction for free hydrochloric acid, which is also present? He further says, "If the stomach is normal (size and position) . . . then dimethyl will give *fairly* accurate results." What is meant by "fairly accurate" results? Both the patients and the general practitioner want *absolutely* accurate, not fairly accurate results. And, when absolutely accurate results are clinically so easily obtainable, we should be satisfied with nothing less than absolutely accurate results.

Einhorn (*N. Y. Medical Journal,* May 9, 1896) has also proved that the dimethyl reacts with very minute quantities of lactic acid.

Summary.—I want to reassert that, while dimethyl reacts very sharply on free mineral acids, it also reacts on other very weak acids; it reacts on such degrees of acidities of acids other than hydrochloric acid as are absolutely within the bounds of even a subacid stomach. That the supersaturated alcoholic solution of tropeolin 00 stands in no way behind the reagents of Günzburg and Boas, but that it has the additional advantage over these, inasmuch as it can be used for titration, and this with absolute precision. That both free hydrochloric acid and organic acids very, very often exist simultaneously, in the same chyme; that the presence of free hydrochloric acid does not negate the additional presence of organic acids, but that the presence of relatively large quantities of organic acids are abnormal and produce symptoms; that the presence of relatively large quantities of organic acids, either introduced into or formed within the stomach, gives the symptomcomplex described by me as "Organacidia Gastrica" (*N. Y. Medical Record,* September 6, 1902). That the presence of organic acids can and should be tested for by my direct method —described by me as the floating test—a test very easily carried out in about a minute or two. That

free hydrochloric acid, organic acid and the general acidity can be determined (and this has always been done by me) in one and the same specimen, thus enabling us to work with very small quantities and also to save time.

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PRECIPITINS AND THEIR MEDICOLEGAL USE.

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(Continued from Page 880.)

It was noted that among the animals tested, sheep, beef, and goat blood reacted more than the most active serum followed the rule of affecting most prominently the heterologous bloods but proved the most satisfactory to work with since it precipitated human serum in two hours when diluted 1 in 200, far beyond the dilution where heterologous bloods gave any response whatever. Even the lower monkey bloods, Java, rhoesus, baboon, failed to react with this serum diluted 1 in 100.

Next, a potent beef-rabbit serum was tested on the above specimens of blood serum with results similar to those reported by Kister and Wolff for horse-rabbit serum. This serum in dilutions of 1 in 5 caused flocculent precipitates in nearly all the bloods within three hours. In dilution of 1 in 10 (test-serum), beef, sheep, and goat blood, reacted alike. At dilution of 1 in 30 (test-serum) sheep blood failed to react, but a dilution of 1 in

TABLE II.

ACTION OF POTENT BEEF-RABBIT SERUM.

Beef						Goat					Sheep					Man					Chicken				Horse			Rabbit		
Blood dilution	10	50	100	200	500	10	50	100	200	500	10	50	100	200	500	10	50	100	200	500	10	50	100	200	10	50	100	10	50	100
Time	Serum 1-5																													
10 minutes	T	T	T	0	0	T	T	T	0	0	T	T	0	0	0	T	0	0	0	0	T	T	T	0	0	0	0	0	0	0
30 minutes	F	F	T	T	0	T	F	T	T	0	T	T	T	T	T	T	F	T	T	0	T	T	T	0	T	0	0	0	T	0
60 minutes	F	F	F	T	T	F	F	F	T	T	F	F	F	T	T	F	F	F	T	0	T	T	T	0	T	T	0	0	T	0
2 hours	F	F	F	F	F	F	F	F	F	T	F	F	F	T	T	F	F	F	T	0	T	T	T	0	T	T	0	T	T	0
3 hours	S	S	S	S	F	S	S	S	F	T	S	S	S	F	T	F	F	F	T	0	F	F	F	0	T	T	0	T	T	0
	Serum 1-10																													
10 minutes	T	T	T	T	T	T	T	T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0		
30 minutes	F	F	T	T	T	T	T	T	T	0	T	T	T	T	0	T	T	0	0	0	0	0	0	0	0			0		
60 minutes	F	F	F	T	T	T	T	T	T	T	T	T	T	T	0	T	T	T	0	0	T	T	0	0	0			0		
2 hours	F	F	F	F	T	T	T	T	F	T	T	T	T	T	0	T	T	T	0	0	T	T	T	0	0			0		
3 hours	S	S	S	F	T	T	F	F	F	T	T	F	F	T	0	T	T	T	0	0	T	T	T	0	0			0		
	Serum 1-15																													
10 minutes	T	T	T	T	0	T	T	T	0	0	0	0	0	0	0	0					0									
30 minutes	T	T	T	T	0	T	T	T	0	0	0	T	0	0	0	0					0									
60 minutes	T	T	T	T	T	T	T	T	0	0	T	T	T	0	0	0					0									
2 hours	F	F	F	T	T	F	F	T	T	T	T	T	T	0	0	0					0									
3 hours	S	S	S	F	T	S	S	S	T	T	T	T	T	0	0	0					0									
	Serum 1-20																													
10 minutes	T	T	T	T	0	T	T	T	0	0	0	0	0	0	0															
30 minutes	T	T	T	T	T	T	T	T	0	0	0	T	T	0	0															
60 minutes	T	T	T	T	T	T	T	T	T	T	T	T	T	0	0															
2 hours	T	T	T	T	T	T	T	T	T	T	T	T	T	0	0															
3 hours	T	F	F	T	T	T	T	T	T	T	T	T	T	0	0															
	Serum 1-30																													
10 minutes	0	T	T	T	T	0	T	T	0	0	0																			
30 minutes	T	T	T	T	T	T	T	T	0	0	0																			
60 minutes	T	F	T	T	T	T	T	T	0	0	0																			
2 hours	F	F	T	T	T	T	T	T	T	T	0																			
3 hours	F	F	F	T	T	T	T	T	T	T	0																			
	Serum 1-50																													
10 minutes	0	T	T	T	T	0	0	0	0	0																				
30 minutes	T	T	T	T	T	T	T	0	0	0																				
60 minutes	T	F	T	T	T	T	T	0	0	0																				
2 hours	F	F	T	T	T	T	T	0	0	0																				
3 hours	F	F	F	T	T	T	T	0	0	0																				

T, turbidity; F, flocculi; S, sediment.

others, while horse, cat, rabbit, and dog bloods reacted very faintly, or not at all, and only with the earlier dilutions of the serum. The reactions with monkey blood will be considered later. The 50 (test-serum) was required before the goat blood gave no flocculi. At 1 in 100 (test-serum), the beef blood still gave a flocculent precipitate in two hours. (See Table II.)

Throughout the above series of tests, which numbered several thousand, it was rather uniformly observed that the flocculent precipitates formed most rapidly in dilutions of blood of about 1 in 100. It was frequently noted that in the tube of blood diluted 1 in 10 or 1 in 20, the turbidity failed to show any flocculent character at a time when in dilution of 1 in 100 the precipitate had fallen to the bottom, all the tubes having received the same amount of test serum. The most important factor in this result appears to be the inhibiting effect on the formation of flocculi exerted by the higher content of albumins. As the result was the same with different quantities of test serum it does not seem possible to refer it to different degrees of saturation of the precipitable molecule with precipitin, although this factor may be prominently concerned. Eisenberg refers it to a relative solubility of the precipitum in an excess of precipitable substance.

Finding that each test serum varied in its strength and specificity of action, it was thought possible that a precipitin prepared in an animal more distantly related might yield a more specific precipitin, since the scope of its cell-receptors might not include so many of those jointly shared by mammalia. Accordingly, a chicken was immunized by fifteen injections each of 10 c.c. defibrinated rabbit blood. Its serum proved very faintly hemolytic, but powerfully agglutinating for chicken blood cells, and caused precipitates in dilution 1 in 100. This serum had no effect on monkey and human blood in any dilution, but acted diffusely on the sera of several domestic animals. Another chicken received 7 injections of 10 c.c. of human placental blood. Its serum failed to affect the sera of domestic animals, or lower monkeys, in any dilution, 1 in 1 or higher, but produced an abundant flocculent precipitate in human blood 1 in 100, when added in a dilution of 1 in 50 (test-serum) in ninety minutes.

From the above experiences it seems possible to define the essential features of a specific reaction with the precipitin test. Regarding the *potency of the serum* it must be concluded that only the more active sera can safely be employed, such as cause flocculent precipitates in three hours when added in proportion of 1 of test serum to 100 of blood solution.

A potent serum is especially necessary when dealing with small blood stains. As the more potent sera are more diffuse in their action, and show certain individual variations in their effects on heterologous blood, it becomes advisable to test each serum on the blood of several domestic animals. The chicken may, provisionally, be recommended as an animal producing a more specific human precipitin than the rabbit. The *dilution of the test serum* must be high enough to rule out spurious reactions from heterologous bloods. It may safely be concluded that when test serum is added to dilute solutions of blood in the proportion of 1 of test serum to 50 of blood solution, only human and monkey bloods will give more than faint turbidities, and that a dilution of 1 in 50 is therefore a safe limit to prescribe. A dilution of 1 in 100 (test serum) may better be employed when the material to be tested is abundant, but with very small stains, yielding very weak solutions, this dilution of the test serum may fail to give a satisfactory reaction.

The *time limit* is a very important part of a specific precipitin reaction. Although Nuttall has found it advisable to measure the quantity of precipitin obtained after twenty-four hours, this lengthy period allows the access of several disturbing factors, which may be avoided by a shorter time limit; principally the growth of bacteria which commonly develop in fluids which have not been passed through a Chamberland filter. Most writers who have employed the test for medicolegal work have preferred to read the reaction at the end of three hours in the thermostat, in which time the disturbing effects of bacterial growth are not apparent, and turbidities in heterologous bloods are less prominent. Moreover, the rapidity with which flocculi form in homologous blood is a very striking distinction from the slower changes occurring in heterologous blood. Hence the objects of medicolegal work seem to require a somewhat different procedure from that best suited to the exact measurement of blood relations among animal species. The formation in three hours of a flocculent precipitate visible to the naked eye, is a requirement which effectually escapes the influence of the personal equation and is the standard now generally employed in descriptions of a specific reaction.

The question still remains as to what reliance can be placed on less definite reactions, in which the turbidity does not become flocculent in six to twelve hours, and which may often be encountered when dealing with old and altered stains. Under such circumstances, one can only conclude that the significance of the results must be determined by all the circumstances in the case, including the age and quantity of the specimen, the strength of the turbidity, and the potency of the serum, and must remain a matter of opinion on the part of the operator.

In connection with the less definite reactions one may profitably remember that humanized sera diluted at 1 in 30 rarely produce prompt and distinct turbidities in any other than human and monkey bloods, and that even in dilutions of 1 in 10 or 1 in 20 (test serum) the turbidities in heterologous bloods seldom become flocculent in three to four hours. It is in such cases that control tests are of great value to determine just what reactions can be secured with heterologous bloods by the particular serum in use.

When, therefore, one has to deal with minute or old and feebly reacting specimens, it appears to be permissible to increase the time limit to four to five hours as recommended by Strube, and to increase the strength of the test serum to 1 in 30 or 1 in 20, but with each concession of this sort the results become less certain.

While convinced that the most reliable conclusions in medicolegal work are to be obtained

by demanding, for the specific reaction, a flocculent precipitate in three to four hours, it must be admitted that the estimation of the bulk of precipitum may in some cases prove to be a necessary and trustworthy standard. In dealing with old specimens of human blood, the writers have found that the action of the serum is for some reason retarded and the precipitum is very slow in becoming flocculent, although at the end of twenty-four hours the bulk of the precipitum, as compared with the controls, leaves no doubt that the specimen is human blood. In such cases, if numerously and satisfactorily controlled, there appears to be no good reason for excluding the results obtained after twenty-four hours from those which can be regarded as specific. The controls in such cases should include a specimen of the tested fluid untreated by any serum, and one treated by some other antiserum.

The dilution of the tested fluid is a subordinate matter in the precipitin test. The writers believe that the data are sufficient to recommend a dilution of blood in the proportion of 1 in 100 as most favorable to the development of flocculent precipitates. Nuttall uses a solution of one part of blood to 20 of .6 per cent. salt in his method of estimation of the bulk of precipitum. Any accurate measurements in dissolving dried blood being impossible, we may employ Nuttall's expedient of shaking the fluid to determine if there is albumin in solution by the foam produced. Unless solutions are slightly colored reactions are very faint and flocculent precipitates cannot be expected, but blood pigments fade markedly with age. Corin obtained precipitates in solutions of blood which failed to give the spectroscopic reactions of Hb.

Unit Strength of Precipitin Sera.—It would greatly facilitate general agreement as to what constitutes a specific reaction if some means were devised of definitely determining and expressing in units the quantity of precipitin used in tests.

Von Dungern employed a rough method which can hardly be recommended. Wassermann and Schutze prepared a standard solution of blood as follows: 1 c.c. of fresh defibrinated blood was soaked up in linen cloth and dried several days or weeks. Two such specimens were then completely dissolved in 10 c.c. of .85-per-cent. salt solution, filtered, and divided into equal portions. To these were added varying proportions of precipitin serum. They designated as a normal serum one of which the addition of 1 c.c. to 5 c.c. of the above standard solution exactly sufficed to yield a distinct flocculent precipitate in one hour at 37° C. If 1 c.c. of serum sufficed it was designated as a 10 N. serum. The amount of precipitin in 1 c.c. of N. serum they designate as a precipitin unit. There are several difficulties in the way of a satisfactory general employment of this unit, including the alterations in the drying of the blood, and the probable variations in the amount of albumen secured by dissolving the stain.

It is much safer to employ fresh plasma or serum for the standard solution, and a dilution of 1 in 100, since that strength seems to be the most favorable for the formation of flocculi, (cf. Eisenberg.) Hence the writers would suggest that a normal test serum be designated as one of which 1 c.c. added to 10 c.c. of fresh serum diluted 1 in 100 yields a distinct flocculent precipitate in one hour at 37° C. and that the unit of precipitin be the quantity contained in 1 c.c. of such normal serum. The average serum obtained after 6 to 8 injections of 10 c.c. of blood in the rabbit would then be of 10 N. strength and 1 c.c. would contain about 10 precipitin units.

On the Differentiation of Monkey Blood.—Stern first noted the fact that monkey blood reacts to humanized rabbit serum much more distinctly than that of any other lower animal. He tested three species, *Cercopithecus, Macacus cynomolgus*, and the "Kronen-affe." Nuttall tested the blood of 46 monkeys and apes finding that the *Simiidæ* yielded almost as much precipitum as man, the *Cercopithecidæ* yield less, while the *Hapalidæ* and *Cebidæ* give but little. He observed that weak humanized sera affect only the two first named groups, while a powerful serum will include them all. Nuttall and Strangeways compared the bulk of precipita forming in human and some monkey bloods with the following results. Human serum 100 per cent., *Macacus* 90 per cent., orang 80 per cent., *Cynocephalus* 70 per cent., mandril 50 per cent., *Cercopithecus* 50 per cent. The first three monkeys named died of dysentery or intussusception and it was suggested that the manner of death might have altered the precipitable substance of the blood.

One of us has attempted the differentiation of monkey and human blood by calibrated serum, but the work is still incomplete and will be presented at another time.

Up to the present stage of this work, it has proven possible to distinguish between human and lower monkey bloods, Java *Inecus cynomolgus, rhæsus, Macacus rhæsus*, baboon, *Cynocephalus ursinus*, by diluting humanized serum 1 in 100, with which strength the blood sera of the above monkeys failed to yield a flocculent coagulum in three hours, and in fact gave but slight turbidity in that time. This rabbit serum, however, failed entirely to separate the blood of the chimpanzee, *Simia troglodytes*, and orang, *Simia satyrus*, which reacted as strongly as did human blood. On the other hand, a humanized chicken serum failed in any dilution, to affect the sera of the above lower monkeys, and in dilution of 1 in 100 chimpanzee blood became slightly turbid, but failed to yield a flocculent precipitate in several hours, although the human blood treated by the same diluted serum gave a flocculent precipitate in one hour. It thus appears that by careful calibration of the test serum the blood of the highest anthropoid monkeys may be distinguished from human blood. In this work it seems to be essential that the test serum be fresh and the bloods tested be fresh, or of about equal age if obtained dry or from the cadaver.

Layton has found that the blood of certain monkeys, variety not stated, may be distinguished from human blood by diluting the blood to 1 in 600, and adding the serum undiluted in the proportion of about 1 in 60.

TECHNICS.

THE PRODUCTION OF PRECIPITIN SERUM.—*I. Animals.*—The rabbit is the animal generally used for the production of precipitin serum. It is easily handled, and reacts to almost every type of blood. Rabbits vary very much in their reaction to injected blood. Some produce very strong antiserum, others very weak, and still others, almost none at all. The fact that rabbits have individual idiosyncrasies in this respect has been noted by several observers. We also found that the common rabbit very often could not withstand the toxic effect of the injection and emaciated very rapidly, some of them succumbing to the treatment. Besides rabbits we used full-grown Belgian hares and crosses between them and rabbits, and they proved not only very resistent to the injections, but also yielded our most potent sera. Too much stress cannot be laid upon the care bestowed upon the animals under treatment. They are often sick from the injections, so that they require plenty of food and clean, airy quarters. It was soon found that the healthier the animals the better were the results with the sera.

Corin and Biondi, Arthus and Vansteenburgh, and Hausner, used dogs in order to get larger quantities of serum and they report satisfactory results. Uhlenhuth injected a lamb and a goat with defibrinated human blood but did not obtain a good serum. One of our most potent sera was obtained from a hen which had received intraperitoneal injections of defibrinated blood. The bird gives very little evidence of any reaction to the injection, and being further removed, biologically, from man, than the rabbit, ought theoretically to yield more selective antisera. Wassermann and Schutze have been testing the serum of a goose but have not yet published their results.

II. Choice and Preparation of Material for Injection.—In order to produce an antiserum for human blood, either defibrinated human blood, blood serum, or some fluid derived from the body, and containing globulin similar to that of normal human blood serum, must be injected. Therefore exudates and transudates, such as can be obtained in the pleural sac and abdominal cavity, which contain a certain amount of serum globulin, are suitable substances for injection.

Defibrinated human blood has generally been used. We obtained it either from the umbilical cord or by squeezing the placenta. The blood from either of these sources was received into a sterile Erlenmeyer flask containing glass beads the size of small peas. If beads are not obtainable, sand, or even broken bits of glass, which have been thoroughly cleansed and sterilized, may be used. Vigorous rotation of these flasks for five minutes sufficed to defibrinate. Some investigators use only the serum free from cells. While it makes little difference with the strength of the antiserum obtained, since only the serum globulin is the active agent in the process, we found it more convenient and less troublesome to use defibrinated blood rather than pure serum. Wassermann and Schutze and Nuttall use serum; Uhlenhuth uses defibrinated blood. Uhlenhuth obtains his blood fresh from the subject by means of Heurteloup's cups (a kind of wet cup). It could easily be obtained from the veins by Thacher's apparatus.

Uhlenhuth found that old dried blood dissolved in .6-per-cent. salt solution yielded an active precipitin serum. Grigorjew used dried blood, prepared as follows: 10 c.c. of either human serum or whole blood is poured on a large glass plate in a dust-free room, at ordinary temperature. The pure blood serum dries in from four to six hours, that mixed with blood in from two to four hours. To prepare this dried serum for injection, he pours 10 c.c. of physiological salt solution over the plate, scrapes the serum or blood loose and stirs it until a uniform solution is obtained.

In order to prove that the drying of the blood did not have any influence upon the formation of precipitin, Grigorjew divided into six portions 3.6 grm. dried calf's blood, three years old, dissolved each portion in 10 c.c. of 1.6-per-cent. salt solution, and injected it subcutaneously into a rabbit. The serum of the rabbit gave a precipitin reaction with calf or beef blood spots. Grigorjew's method and experiment are important because fresh human blood is not always obtainable, and in such a case, a supply of dried blood would prove of much service.

Ziemke has made use of blood from the cadaver in cases where death was due to hemorrhage. He has taken it from cadavers which were three and four days old and even older and none of his rabbits became infected. His method is to place the blood in high glass cylinders, pipette off the serum into sterile Erlenmeyer flasks and add chloroform in the proportion of one part to ten of serum. If he had doubts as to the sterility of the serum thus prepared he injected it subcutaneously rather than intraperitoneally. His results were almost, though not quite, as good as when fresh blood was used. Minovici found that cadaver blood, even when fresh, gave a weaker serum than placental blood. Minovici injected amniotic fluid and Ziemke tried hydrocele fluid. Both found that the precipitin serum obtained was weaker than that obtained with human blood or serum. The same holds true when ascitic fluids or pleural exudate are used, since as Biondi has pointed out, they contain only one-third the amount of serum globulin contained in blood. Hence larger quantities and more frequent injections are required. With pleural exudates especially it is found that the animal may not withstand the toxic substances often contained in such fluids, and the danger of infection is also greater. Albuminous urine has likewise been employed. Dieudonné used a urine which registered 3 to

7 grm. of albumin per thousand (Esbach), LeClainche and Vallée, a urine containing 1-2 grm.; Mertens one containing 4 per cent. albumin; and Zuelzer a 1 to 9 per cent. specimen. The animals usually suffered considerably, many injections were required at long intervals, and the resulting serum was not extremely active.

Corin has devised a method for utilizing ascitic fluid which yielded very satisfactory results. He saturates ascitic fluid with magnesium sulphate at a temperature of about 30° C. The resulting precipitate is dissolved in water and this solution again saturated with the sulphate. This precipitate is then allowed to dry on the filter. For injection, it is only necessary to dissolve the dried precipitate in water, as the magnesium sulphate is not harmful to the animal. Corin estimates that the solution thus obtained contains 4.5 per cent. paraglobulin. By this method a concentrated solution of globulin can be injected at frequent intervals. Ammonium sulphate cannot be used because it throws down albumin as well as paraglobulin; because the precipitate does not dissolve easily in water; and the solution when obtained is found to cause a cloudiness in human serum through the action of the salt.

In the present work it was found that either fresh serum or defibrinated blood yielded the best results. Our results with other albuminous fluids were unsatisfactory, and we do not believe that any other material can safely replace fresh whole blood, when medicolegal work is proposed and active selective sera are required. Most of the human blood was obtained from the cord and generally remained sterile. The quantity obtained at one time was necessarily small, amounting on the average to two ounces. By squeezing the placenta, larger quantities of blood can be obtained, but there is more likelihood of contamination. Another factor, which seems to have some bearing on the production of a potent serum, was the freshness of the blood. The reaction of the rabbit after injection of a fresh specimen was always more pronounced and more lasting than from specimens which had been kept in the refrigerator a few days. Uhlenhuth and Minovici noted this same fact. Beef, sheep and other bloods obtained from the slaughter-house should be tested bacteriologically before using, since they are frequently contaminated with vomitus.

III. Methods of Injection.—The injection may be either subcutaneous, intraperitoneal or intravenous. Each method has its adherents, and produces an equally good antiserum when the other conditions are equal. Uhlenhuth, Biondi, Corin, Nuttall and Minovici, injected intraperitoneally. Grigorjew, Dieudonné, Arthus and Vansteenburgh, Okamoto, Stern, and Wassermann and Schutze, injected subcutaneously. Graham-Smith and Sanger, LeClainche et Vallée, Mertens, and Strube, prefer intravenous injections. The technic of subcutaneous and intravenous injections, requires no special comment. The method of intraperitoneal injection is more complex and requires greater care. The method employed by Minovici is as follows: Animal held head downward, in order to get the internal organs out of the way, hair cut away with scissors from lower part of abdomen and skin sterilized with 2-per-cent. sublimate solution; epidermis cut with sterile scissors, and needle pushed through the wound into the abdominal cavity; wound closed with cotton and collodion. He injected twenty rabbits by this method and had no infection.

Nuttall shaves the abdomen, sterilizes the skin with lysol, and punctures the skin in the lower left hand region of the abdomen with a scalpel. Then he bores through the fascia and the muscles with a blunted hypodermic needle and afterward applies tr. benzoin to the cut.

Biondi draws up the blood or serum into a long sterile glass tube which has been drawn out to a point at one end. The other end is closed with sterile cotton. He disinfects the skin of the abdomen with 10 per cent. sublimate and then bores through into the peritoneal cavity with the capillary end of the tube.

The method we employ is as follows: An area about the size of a half dollar, just below the middle of the abdomen, is shaved and disinfected either with lysol or sublimate solution. An assistant holds the rabbit by the ears with one hand and places the other behind the animal's shoulders keeping the head stretched well backward. In this way the greater part of the body hangs free, and the skin of the abdomen is tense. The needle is then inserted at any point in the part prepared. It should be inserted through skin and muscle slowly and with steady pressure and as soon as it enters the peritoneal cavity, which it does with a jerk due to the absence of resistance, it should be turned in such a manner as to be along, and close to, the peritoneum covering the abdominal wall it has just entered. The needle may then safely be inserted a sufficient distance to ensure its remaining in the body while the blood is injected. The object of turning the needle as soon as it is through the peritoneum is to avoid puncture of the gut which is the only danger in the method. By practice one soon learns to feel the jerk which signals the entrance into the body cavity. If the needle is sharp and is inserted slowly and with even pressure the rabbit will remain perfectly quiet when held as directed. Should the rabbit be refractory, it will be necessary to hold the hind legs extended. In so doing the animal's back should be arched so as to cause the abdomen to bulge. The object of this is to prevent the needle merely passing through the skin and subcutaneous fascia and pushing the muscle wall in front of it, so that a subcutaneous injection results instead of an intraperitoneal. The needle should be of fairly large caliber, a hypodermic is too small, and should have a length of at least two inches. If the needle is so large that it leaves a canal through which the blood oozes from the peritoneal cavity, a valve can be made to close it by first drawing the skin to one side and puncturing, after

which it is allowed to retract into place and thus cover the hole through the fascia and muscle wall. After puncture, no collodion or other dressing is necessary.

IV. Number and Frequency of Injections.—The number and frequency of injections required depends on which route is employed, intraperitoneal, subcutaneous or intravenous. Strube states that on an average six intravenous injections of 1 c.c. of defibrinated blood given in the course of eight days, produce a serum yielding a positive reaction in human serum diluted 1 in 1,000. He admits that much depends upon the individual peculiarities of the rabbits. In one instance he obtained a serum which gave a reaction in 1 in 20,000 after injections covering a period of fourteen days. He does not state how much or what blood or how many injections he used. Mertens at first injected subcutaneously and then changed to the intravenous method. He injected urine containing albumin every day for seven days to the amount of 35 c.c. LeClainche and Vallée also injected urine intravenously, 20 c.c. at a time, and a total of 150 to 200 c.c.

The latest investigators using the intravenous method are Graham-Smith and Sanger. They injected about 18 c.c. divided into portions of 5, 5, 5, and 3 c.c. at intervals of two, three, and four days. They found this to be sufficient to produce a powerful antihuman serum. Powerful antibeef and antisheep sera were obtained after the intravenous injection of 9 and 12 c.c., in doses of 1, 2, 1, 3, and 2 c.c. and 1, 5, 2, and 2 c.c. or 3, 5 and 3 c.c., respectively. The intervals between the injections were 4, 4, 2 and 5 days in each case. We are in no position to criticise this method, having used only the intraperitoneal route, but suggest that more uniformity is desirable. Some investigators, among whom is Uhlenhuth, report poor results with the intravenous method, and prefer one of the other means. It is also difficult to form any idea of the strength of the sera thus obtained, because the descriptions of the reactions are incomplete.

Wassermann and Schutze are the most prominent investigators to use subcutaneous injections. They obtained their sera by five or six injections of 8 to 10 c.c. of serum, every second day. This they claim gives a serum which is powerful enough to differentiate human blood. Grigorjew and Dieudonné injected 10 c.c. subcutaneously every third or fourth day, and used six injections. Arthus and Vansteenburgh employed five injections of 5 c.c. each, every fifth day.

Stern injects 5 to 10 c.c. beneath the skin at intervals of two days or more, depending upon the condition of the animal. Okamoto also used the subcutaneous method. He injected amounts of blood varying from 12 to 15 c.c. at irregular intervals, which he determined by fluctuation in the rabbit's weight. Total quantity injected was from 60 to 85 c.c.

The intraperitoneal injection, which is the method generally used, is employed by Uhlenhuth. He injects 10 to 20 c.c. at intervals of six to eight days, until he has injected a total of 60 to 80 c.c. Ziemke injects every third to fourth day, depending upon the behavior of the animal's weight, until the total of 60 to 100 c.c. is reached. Minovici used six to eight injections of 10 c.c. each, of fresh blood, every fifth or sixth day; older blood every second day. Honl injects 5 to 10 c.c. every third or fourth day. Nuttall, whose work in this field covers the most ground, injects intraperitoneally, five or six times. He commences with 5 c.c., and then, after the third injection, increases the quantity to 10 c.c. He regulates the interval between injections by waiting until the animal regains the weight lost after a previous injection. Biondi injects intraperitoneally 5 to 10 c.c., at intervals of two to four days, until the rabbit has received from 50 to 80 c.c. He obtained his best serum from the rabbit which had received 40 c.c. within 24 days.

Our experience has led us to prefer the intraperitoneal injection, because of the ease of execution, the small chance of infection when a little care is exercised, the fact that rabbits react promptly when foreign matter is introduced into the peritoneal cavity, and because the peritoneum is tolerant to such injections. We have found that the most suitable amount for the single injection of human defibrinated blood or serum is, as a rule, 10 c.c. If the blood or serum is fresh, it is safer to inject at first only 5 c.c. This is especially true of the serum of certain horned animals, as beef, and sheep, which are more toxic to the rabbit than human blood. We have injected as high as 20 and 30 c.c. of serum at one time, but these large quantities did not increase the potency of the serum. On the contrary, they seemed to inhibit the formation of antibodies.

We found that injections at an interval of four days, yielded the best results. Some observers use the weight of the animal as a guide to the repetition of the injection. We did not find it necessary to resort to this measure, because one sees at a glance whether or not the rabbit is doing well, if it feeds normally and is as active as it should be. Those who observe the weight of the injected rabbits also find that a three or four day interval is the most suitable. If the blood is old or if the rabbit is very tolerant, injections may be made as often as every two days. But not much time is gained in such cases, since it would appear that the animal requires a larger number of injections to develop a powerful antiserum. When a rabbit does not appear to be doing well, treatment should be omitted, until it has recovered. Nothing is gained by injection at such a time, because it is almost certain to cause further emaciation and is just as certain not to cause the formation of a good antiserum. The number of injections required we found to vary, according to the material used and the idiosyncrasy of the rabbit, from five to eight; the total quantity of serum being from 50 to 80 c.c. This experience accords with the observations of Uhlenhuth, Wassermann and Schutze, Biondi, Nuttall and others. We found that if after eight in-

jections, a satisfactory serum was not obtained, further treatment was useless, as the animal was apparently incapable of yielding a good serum. On one occasion Schutze, in this laboratory, obtained a very active precipitin after two injections of a total of 20 c.c. of defibrinated blood. With subsequent injections to the total number of seven, there was no improvement, in fact the serum became weaker. Nuttall noticed that some rabbits yielded a good serum after the third injection. If injections are continued after an animal has developed an active antiserum, the strength of the serum may be increased, but sometimes it is diminished, as observed by Uhlenhuth and ourselves. In one instance an animal giving a serum which yielded flocculent precipitates in one hour when added to human blood (1 in 100) in dilution of 1 in 200, received two injections in four days of 20 to 30 c.c. of fresh blood. One week later its serum diluted 1 in 50, failed to precipitate human blood 1 in 100 in three hours. At the same time the animal began to emaciate. Stern was able by repeated injections and with due regard to the condition of the rabbits, to produce an antiserum which reacted in blood 1 : 50,000.

It sometimes happens that after a rabbit has received eight injections, it yields an antiserum which is not as powerful as desired. If, now, this rabbit receives no further treatment for at least one month and then injections are renewed, the potency of the precipitin may be found to have increased. One of our antibeef rabits did not yield a good antiserum after several large injections. It had not lost appreciably in general condition. Nothing further was done to the rabbit for three weeks, when the injections were resumed. It then yielded a much more powerful antiserum than before. Strube reports that one rabbit, which had received 8 c.c. of blood intraperitoneally in January and had a value of 1 : 5,000, was reinjected in April, with the same quantity of blood, and gave a reaction in 1 : 20,000 dilution of human blood.

Uhlenhuth first called attention to the fact that some sera from immune rabbits have a milky, opalescent appearance. He noticed that this opalescence increased after intravenous injections. Physiologists ascribe its occurrence to digestion. Nuttall noticed it and thinks it due to very large injections. He also remarked that some of the rabbits yielding this serum suffered from cysticerci of the liver. Uhlenhuth and Rostocki have shown that it cannot be removed by filtration through porcelain. We noticed it in one case which had received large injections. Such sera are untrustworthy and should not be used.

The *course of the development of blood precipitins* has been followed by v. Dungern who describes four periods: (1) a *latent period* following the injection, during which the blood fails to show any precipitin, (2) a *period of increase* of precipitin, (3) a *period of equilibrium*, when the precipitin does not vary, and (4) a *period of decrease* of precipitin. In fresh animals a period of four to six days followed the first subcutaneous injection of foreign plasma before any precipitin appeared in the blood. The precipitin then increased in quantity reaching its highest development in about two days. A short period of equilibrium then followed or the decrease began at once and continued irregularly, with considerable variations in different animals. If a new injection is given, at the time when the precipitin has reached its highest point, within one-half hour most of the antibody disappears, being saturated by the new plasma, and the latent period before the reappearance of precipitin is shorter than after the first injection and continues to shorten after succeeding injections. After successive injections the increase of precipitin is usually much greater than after single doses and persists longer. Five minutes after single injections the foreign albumin was demonstrable in the blood by the precipitin test, but disappeared within one hour. After successive injections the disappearance of the foreign albumin was slower.

V. Methods of Bleeding.—The progress of development of precipitin in the blood, may be determined from time to time by drawing a little blood from the lateral ear vein of the rabbit. These preliminary tests of the serum should not be made less than three or four days after an injection, since each injection of blood causes a temporary diminution in the precipitin. The ear is shaved, sterilized with lysol, sublimate or other disinfectant, and washed with sterile water. It is well to suspend the rabbit by the hind legs, and to have an assistant gently compress the vein at the base of the ear. When the vein is cleanly cut the blood flows to the tip of the ear and can be caught so that it drops to the bottom of the test-tube. When there is about 5 c.c. in the test-tube it is laid in a slanting position, permitted to clot, and then placed in an ice chest. If it is found that the serum does not exude from the clot, the latter should be loosed from the test-tube by means of a platinum loop. The serum will also be found to collect better when the tube is out of the ice chest for a time.

There are three practical methods of obtaining large quantities of serum from the rabbit. The first is by bleeding from the ear veins. We have already described the procedure. As much as 40 c.c. of blood may be had at a single bleeding and if care is exercised the blood obtained can be kept sterile.

Wadsworth (1903) demonstrated, before the New York Pathological Society, a method whereby the blood is made to flow profusely from the lateral ear vein. The rabbit is held head-downward and wrapped in a blanket. Inside the blanket and next to the spine is placed a hot water bag with the result that the peripheral vessels are dilated by overheating. The second method of bleeding the rabbit is one which entails the death of the animal, and consists in bleeding from the heart. As practised by Uhlenhuth, the procedure is as follows: The hair is removed from the chest-wall, the skin sterilized, and the anterior chest-wall cut away with sterile scissors. The

left ventricle is then cut and the blood allowed to flow into the pleural cavity, whence it is sucked up with a sterile pipette, put into flat dishes or cylinders, allowed to clot, and the serum removed later. Minovici modifies this method in that the pulsating heart is lifted out of the chest and held in the mouth of a vessel into which the blood flows when the ventricle is cut. The third method is that of bleeding from the carotid artery. It is frequently used, because a large quantity of blood is obtained without sacrificing the animal. The rabbit is fastened securely on its back, the head well extended and the throat shaved. The skin is then disinfected and an incision is made in the median line, extending from above the larynx to the sternum, and through the skin and fascia. Then by means of blunt dissection the muscles along the trachea are separated and the carotid exposed. The vessel must be freed from the pneumogastric nerve, which lies in the same sheath with it and in doing this care must be exercised to avoid tearing the vessel. When the carotid is isolated it is clamped as high up as the incision will allow and also as low down as possible. The vessel is then divided near the upper clamp and seized securely by its fascia, with small pointed forceps near the cut end. The lower clamp is then loosened and the stream of blood can be directed into the receiving vessel or into test tubes which are afterward laid in a slanting position. When a test tube contains enough blood the artery clamp can be temporarily closed until the next is ready. Sometimes a clot forms at the mouth of the vessel and stops the bleeding. This is easily removed by stripping the vessel with a pair of anatomical forceps. When sufficient blood is obtained, both ends of the carotid are tied off and the wound sewed. If it is desired to exsanguinate the animal, it will be found advantageous toward the end to firmly compress the body with the hand, commencing at the lower end of the abdomen and ending at the chest. In this way almost every drop of blood can be squeezed out of the body. Some investigators insert small glass tubes into the carotid but this is unnecessary and complicates the operation.

In bleeding a bird the blood is taken from the large vein on the under surface of the wing, which is plainly seen beneath the skin at the angle between the wing and trunk. It bleeds very freely.

A considerable interval should elapse after the last injection, before the blood is removed for use in tests. From experiments conducted principally on the development of bacterial precipitins, it has been found that the greatest development of immune bodies is seen from one to two weeks after the last of a series of injections, and the same rule has been found to apply in the development of blood precipitins. Some observers regard six days as sufficient, while others allow fourteen. We have always obtained active sera after an interval of seven to ten days.

There are at hand but few definite observations regarding the *persistence of active precipitins* in the blood of animals employed. Strube found in eight rabbits which had been treated intravenously that the sera retained a value of 1 in 1,000 for four weeks. Later they diminished rapidly in strength, for after eight weeks three animals which showed original strengths of 1 in 5,000, 1 in 1,000, and 1 in 1,000, had almost completely lost their activity. Graham-Smith and Sanger found that some sera retained their specific qualities for twelve months, while others deteriorated more rapidly. Nuttall noted that some sera became untrustworthy after a time, giving cloudings with all sera.

Our chicken immunized to human blood, and whose serum originally gave a flocculent precipitate in one-half hour in human serum 1 in 100, when added in dilution of 1 in 50, very rapidly lost its potency and was practically inert four weeks after the last injection.

Of two humanized rabbits receiving nine injections and then yielding a serum which at dilution 1 in 30 gave a flocculent precipitate in one hour, we found that one continued to yield a powerful serum for at least twenty-three days (flocculent precipitate at 1 in 30 in one hour) but the other had lost much of its activity in that time (moderate turbidity at 1 in 30 in three hours). A beef rabbit, also, after twenty-eight days, gave a serum of undiminished activity, while a humanized rabbit strongly immunized but emaciating from ringworm, gave an inert serum after eight months. Comparing these observations with those on the changes in serum stored on ice, it appears that the specific precipitins are much longer retained in the test tube than in the animal's body, but that a strongly immune animal may be expected to yield a good serum for at least three weeks after the last injection.

Methods of Applying the Precipitin Test.—Many of the details of the application of the precipitin test have been fully considered in the theoretical discussions of this article. Other matters which deserve mention, concern the methods of dissolving the suspected stain, its clarification, the instruments to be used, and the scope of necessary controls. The solution of the stain should be made in .6 or .8 per cent. of NaCl (c. p.). A fresh stain dissolves promptly, but very old stains may require soaking for some hours. Ziemke has recommended .1 per cent. soda solution as more active than salt in dissolving old stains, and he reports some positive results obtained from such solutions when the solution in salt was negative. That some of the reactions were referable to the soda and not to a specific reaction on the albumins is suggested by the observations of Graham-Smith and Sanger, who obtained some spontaneous precipitates when blood serum was dissolved in .1 per cent. caustic soda. The use of this solvent cannot at present be endorsed. Ziemke also claims to have secured positive results from stains entirely insoluble in salt or soda by dissolving in concentrated solution of potassium cyanide and neutralizing by tartaric acid in substance almost but not quite to the point

of neutralization to litmus. This procedure also introduces sources of error that are difficult to control, especially the abnormal content in chemicals. Graham-Smith and Sanger found that test serum is clouded in one hour by potassium cyanide 1 per cent., or tartaric acid 1 in 1,000, although the prompt neutralization of the acid prevented any precipitation of albumins. We have employed this method successfully, with proper controls, on comparatively fresh blood clots, but failed with an old specimen of blood in earth. It can be undertaken only with comparatively large stains. Schutze, in this laboratory, could not convince himself that the results with this solvent were trustworthy.

All solutions of blood stains from miscellaneous materials should be tested for their reaction to litmus, and if found distinctly acid or alkaline, should be neutralized by sodium carbonate or tartaric acid. If spontaneous or spurious reactions occur in solutions of blood from earths containing lime salts, these must be removed by a current of Co_2, and filtered (Graham-Smith and Sanger).

There appears to be at hand no means of removing from solutions of stains on leather the tannin which seems to be the cause of spontaneous and spurious reactions. The general topic of the removal from solutions of blood stains these and other disturbing agents which will doubtless be encountered from time to time offers a large field for further investigation.

Great care is necessary in the choice of chemicals used in serum work. The writers encountered a sample of NaCl guaranteed c. p., which caused spontaneous precipitates in various sera.

Filtration.—Most solutions of blood stains require filtration, since it is essential that the fluids be perfectly clear before adding the test serum. Filtration through Schleicher's paper (blue label) will clarify the great majority of solutions.

An asbestos wool filter backed by a perforated platinum scale is also very effective. An electric centrifuge is of much value as a means of clarifying many solutions.

Solutions of materials containing many bacteria should be passed through a small Berkefeld or Chamberland filter. Small test tubes, inside diameter not less than one-half centimeter, are required, and a stock of sterilized pipettes are needed to handle the solutions and test serum.

Greenbaum and others, instead of using test tubes, have followed the reaction under the microscope in specimens prepared by adding one or more drops of test serum to a small quantity of solution on a glass slide or in a hanging drop. The use of alkali is in the cleansing of glass ware must be avoided.

Controls.—Without the employment of several controls, no reliable conclusions can be obtained from the application of the precipitin test.

The frequent occurrence of spontaneous precipitates demands that one specimen of the tested solution be carried through without the addition of any serum.

Since the solution may contain some agent slowly precipitating foreign albumins, it is necessary to carry through a specimen of the tested solution which receives the same quantity of some other antiserum or foreign serum as is used of the specific test serum. In testing for human blood the writers employed for this control a potent beef-rabbit serum, but normal rabbit serum may perhaps suffice.

Very welcome corroborative evidence is usually obtained when one carries through a known specimen of human blood of appropriate dilution to which is added the usual quantity of test serum.

As there is considerable variation in the specificity of different rabbit sera, careful workers prefer to test each serum on the blood of several domestic animals as well as on human blood, to determine not only the strength of the serum, but also its effect on heterologous blood. This control is the more necessary with the more powerful sera.

If the observation extends longer than three hours, the precipitum should be examined for the presence of bacteria, the growth of which is not always inhibited by chloroform.

Since any albumin from the human body may respond to humanized antiserum, it must first be determined by the hemin or spectroscopic tests that the material is blood. While it is possible that the blood of a domestic animal may be mixed with human albuminous exudates as sputum, pus, urine, or feces, such a combination must be exceedingly rare. A microscopical examination will usually determine the presence of mucus in sputum, excess of leucocytes in pus, and fecal detritus. The gross appearance of the stain will usually determine the possibility of mixture with urine, or the demonstration of characteristic crystals of nitrate of urea may be undertaken.

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MEDICAL PROGRESS.

MEDICINE.

Protection Secured by Antityphoid Inoculation.—This report refers to the incidence of typhoid fever in the inoculated and uninoculated soldiers in Lord Methuen's column at the Modder River, South Africa, from December, 1899, to March, 1900. A. E. Wright (Lancet, Oct. 10, 1903) compares these records with those obtained from a similar investigation made in India during the year 1901. The report shows that the more recent experiments testify to a diminution of the incidence rate by more than half during the period of observation. In South Africa it is fair to believe that the continuance of a similarly diminishing rate has persisted. Unfortunately the records do not state anything in regard to the case mortality of the inoculated and uninoculated, who are attacked by typhoid. This, no doubt, is due to the fact that the sick were transferred out of the Surgeon-General's jurisdiction.

Notes on the Urine of Children.—Although Dr. Churchill, of the Chicago Polyclinic has presented some interesting conclusions on this subject, it appears that variations in race and climate make it necessary for each community to work out what might be called the "iso-ures" for its own particular region. Arthur W. Fuller (Lancet, Oct. 10, 1903) has endeavored first to estimate the average amount of urine passed in twenty-four hours by children of average health of the ages of six months up to twelve years, inclusive. Secondly, the estimation of the total urea usually passed in the urine of children when in health. Thirdly, the quantitative estimation of the purine bodies in the urine of such children. The method of estimating the total urine passed was as follows: Each child was obliged to empty its bladder at noon, and the child was then carefully weighed. All the urine passed until noon the next day was saved, and a mixed specimen used for determination. The purine bodies, although containing but a small quantity of nitrogen, almost all of this element passing off in the urea, are of great interest from the point of view of proteid metabolism and the estimation of uric acid. They used to be called the xanthin on nuclein basis, but more recently they have been shown to be derivatives of a substance called purine. Theobromine, caffeine, theine, substances which are present in quantities varying from one to three per cent. in cocoa, coffee and tea, are also purine derivatives. Purine itself, however, has not yet been found in the body. The quantity of purine bodies in the urine bears a distinct relation to the amount of the purine contained in the food eaten, and is also affected by the extent of the nuclein cleavage in the metabolic processes of the body. Thus have arisen the terms oxogenous and endogenous purines. Purines exist in all forms of meat extracts and in fresh meats. All vegetables contain them. Oats also contain them. The specific action of uric acid and the other purine bodies upon the various tissues of the body are of great interest, first in relation to the question of diet in children during the early years of life, and second, in regard to the cessation of the process of growth, the maintenance of adult life and the gradual decline of body activities. The general conclusions are as follows: The amount of urine increases with the growth of the body, but the amount of urine passed per kilogram of body-weight does not increase. The amount of urea passed per kilogram of body-weight would appear to be increased about the second year, but after that it is constant up to the twelfth year, the increase at the second year being due to the greater quantity and variety of food. The purines bear no relation to the kilogram of body-weight. This is of interest because, as there were great variations in the individual, it may point to hereditary and constitutional tendencies. A recognition of which might enable one to prevent gouty or kindred attacks.

Tuberculous Rheumatism.—Under this name are to be included, according to A. Poncet and M. Mailland (Monographies Cliniques, Aug. 1, 1903), a series of manifestations, apparently rheumatic and of tuberculous origin, residing either in the articulations (articular tuberculous rheumatism) or in other organs, as tendinous sheaths, muscles, nerves or viscera (abarticular tuberculous rheumatism). Whether these conditions are single or associated, their lesions are most frequently distinct from the habitual lesions of tuberculosis. Their manifestations range all the way from hyperemia and exudation to acute or chronic inflammation, without specific products. Tuberculous rheumatism belongs to the large class of infectious rheumatisms, or pseudo-rheumatisms. Another fact that imparts to this condition the distinction of being a new pathological entity, is the surgical experience that these cases have none of the tuberculous lesions in the classic sense of that word. They are exclusively inflammatory lesions, in no way distinguishable from those produced by other infections.

Rapid Method of Diagnosis in Leprosy.—With this disease hovering about so constantly, although sparsely, it is of value to the general practitioner to know that it can easily be diagnosed by a physical examination of the peripheral nerve-trunks. Of these a most characteristic symptom is the swelling which is in some cases very marked. The ulnar, being the most superficial, is the one in which enlargement is easily detected, notwithstanding the external popliteal, as it winds around the neck of the fibula and the musculospiral, where it becomes superficial, above the outer condyle, are almost equally prominent. Dr. F. J.

Shepherd, of Montreal (Jour. of Cut. Dis., Oct., 1903) reports a case in which the diagnosis was obscure, and in which this symptom lent aid in establishing it. The patient was a Chinaman from whom a history was not to be had. There was no nasal secretion whatever, so that the point in diagnosis first noted by Dr. Mewborn, viz., that the lepra bacilli are always to be found in the nasal secretion—leading to the belief that the nose may be the original method of ingress—was absent because of the lack of secretion. A nodule was therefore cut from the thickened ulnar nerve and on microscopical examination the whole tissue of the nerve was found to be packed with the germs.

Etiology of Exophthalmos.—The most common causes of protrusion of the eyeballs are trauma and suppuration of the orbits, periostitis, thrombosis of the ophthalmic vein or of the sinus, less commonly hemorrhage, emphysema or tumors of the orbit. Two distinct diseases are characterized by this symptom, Basedow's disease and pulsating exophthalmos. In high-graded myopia and complete external ophthalmoplegia there may also be an undue prominence of the bulbs. It is less commonly known that cerebral disease (tumor, abscess, external and internal hydrocephalus and chronic serous meningitis) leading to increased intracranial pressure, is frequently accompanied by exophthalmos, and G. Flatau (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 5 and 6) cites five cases of his own observation. Probably if all cases were to be examined systematically with the exophthalmometer before and after lumbar puncture, the symptom would be encountered more often. Rarely it may be due to irritation of the sympathetic; in most instances it is an expression of impeded circulation in the cavernous sinus. As a rule the tumor or abscess will press directly upon the sinus, though in rare cases the general intracranial pressure may be so extreme as to interfere by itself with the circulation. Compression of the sinus in the posterior fossa will also bring about stosis in the cavernosi. Individual variations are present and sometimes the anastomoses with the facial vein are so abundant that the entire cavernous sinus may be compressed without the appearance of exophthalmos. In such cases, however, there is generally edema of the lids.

Pathogenesis and Treatment of Goiter.—The hypothesis is advanced by G. Migliacci (Gazz. Osped., Sept. 27, 1903) that goiter is due to the presence, in drinking water, of a specific organism; and that some special condition of the gland, in individual cases, renders it a fitting soil for the development of the microorganism. This hypothesis he bases upon the following facts: Goiters are common under conditions which cause stagnation of blood in the thyroid vessels; as in those countries in which heavy loads are carried upon the back and held in place by straps which are so arranged as to compress the vessels of the neck. These tumors sometimes occur after a sudden, violent muscular effort, and finally, epidemics of goiter are seen in countries in which it is endemic, and in the water of one such a locality—Aosta—Carle and Lusting found a microorganism of special morphological and biological characteristics. Microscopically, the tumor is seen to be largely made up of new-formed connective tissue, which compresses and causes atrophy of the healthy tissue. This connective-tissue formation the author believes to be due to irritation from the bacterial toxines; Torri having demonstrated that chronic infections induce connective-tissue proliferation in the thyroid. Administration of thyroid preparations seems in many instances to have best fulfilled the indications for treatment, *i.e.*, supplementing the lessened functional power, due to compression—atrophy and destruction or limitation of the connective tissue. That the latter is accomplished, is evidenced by numerous cases in which the size of the gland was much reduced, or its increase arrested by administration of thyroid preparations. How this is accomplished is not clear, but the author suggests that it may be due to a bactericidal power of the thyroid juice.

SURGERY.

A New Cystotomy Operation.—A novel procedure, particularly applicable to old people with thick abdominal walls in whom a median cystotomy would be attended with considerable risk on account of possible complications, is recommended by R. Frank (Archiv f. klin. Chir., Vol. 71, No. 2). The operation is practically a perineal cystotomy and the main points are as follows: A transverse perineal incision is made and the rectum separated from the prostate, the blunt dissection being carried back until the posterior bladder wall, the seminal vesicles and Douglas' pouch are exposed. The section of exposed bladder wall is now incised in the median line, and the interior of the viscus explored. The author has used this method in two cases of vesical calculus, and in one of papilloma of the bladder, with good results. The operation requires more skilled technic than the median section, but the author thinks that this is compensated by the simplicity of the after-treatment, more favorable drainage and cutting short the period of healing. The patients need to be kept in bed about eight to ten days, but during this time they may change their position and from the beginning lie on their side.

Surgical Access to the Spleen.—In case of a floating spleen, a median laparotomy must be resorted to in operating upon that organ, as its location is uncertain; but if its position be fixed, it is best reached by extrapleural resection of the left costal arch, according to J. Vanverts (Nord. Méd., Sept. 15, 1903); the severance of the ribs' anterior attachments, one to the other permitting them to be spread apart and more readily raised, so that a wider access to the operative field is obtained. The author describes the operation as follows: In the presence of a hypertrophied spleen, a median or lateral longitudinal abdominal incision is made; this being met by a transverse incision, the posterior limit of which reaches the midaxillary line. If the spleen be of normal size, the incision is made parallel with the costal arch and about a finger's breadth below it. This incision commences at a point midway between the median and mammary lines, and extends to the midaxillary. The ribs are laid bare by dissection of the flap, the ninth and tenth resected at their chondrocostal articulations and the eighth one centimeter from its chondrocostal articulation, and again at a point corresponding with the internal limit of the incision. The cartilaginous bridge between the seventh and eighth ribs is then severed. The arch being liberated, with a bistoury, from the insertions of the diaphragm, it may be readily raised, thus affording a very free access to the spleen.

A New Instrument for the Introduction of Wire into Aneurisms.—The factors in the construction of an instrument for this purpose are: (1) It must carry the wire on a reel and have some form of fine canula through which the wire is to pass; (2) it must remove the wire from the reel and force it through the canula, yet without permitting it to kink; (3) it must not allow the wire to damage the sac or the surrounding tissues, although some force has to be used in the introduction of the wire, in other words, it must be made to coil up within the sac; (4) it must be simple in construction and so easy to work that no instrumental complication may occur during the actual operation, and it must necessarily be capable of withstanding prolonged boiling; (5) it should, if possible, "snag" or roughen the wire,

as coagulation is likely to be promoted by such roughening. D'ARCY POWER (Lancet, Sept. 19, 1903) describes such an instrument, which has been perfected by Mr. G. H. Colt. Eighty inches of silver wire, with a clotting surface of 3.7 square inches were introduced, with the aid of this new machine, with such speed that the entire operation occupied but 30 minutes. The aneurism was from the abdominal aorta and sacculated. Unfortunately the patient died, but the autopsy showed that so far as the technic of the operation went, the result of the machine's work had been very satisfactory. A few strands, seven inches long, were found projecting into the aorta, having reached this position via the lumen of communication; otherwise the wire was evenly arranged over the periphery of the aneurism. The wire used was No. 27 Standard Wire Gauze. It was slightly flattened by being passed under a milling tool. The instrument is made by Down Bros.

Adrenalin for Anesthesia.—The two things which must constantly be kept in mind in using adrenalin with cocaine, are the proper dose and the possibility of a secondary hemorrhage, according to H. BRAUN (Centralbl f. Chirurgie, Sept. 19, 1903). Eight drops of the commercial solution have caused very disagreeable symptoms and even respiratory failure in one case. The addition of two to five drops to 100 c.c. (3½ oz.) of Schleich's solution will, in most cases, be sufficient. So dilute a solution has another advantage: It will check capillary hemorrhage without constricting the larger vessels, so that ligatures can be applied and secondary hemorrhage need not be feared.

Iodipin Injections Demonstrated by the Roentgen Rays.—An interesting observation, made by M. LANDOW (Münch. med. Woch., Sept. 22, 1903), is that iodipin injected into tissues can well be demonstrated by the X-rays, even if several months have elapsed. That a wrong diagnosis can easily be made is clear. The author's patient was suffering from bone-abscess, which had been treated for a long time as rheumatism with iodipin. The radiograph showed dark streaks in the muscles, which were first looked upon as evidences of ossifying myositis. At the operation they proved to be areas infiltrated with oil, which gave a distinct iodine reaction and a dark shadow when tested with the X-rays.

Aneurism of Left Subclavian Produced by Fracture of Clavicle.—A subclavian aneurism is rare enough to of itself be of interest. When it is the result of a fracture of the clavicle it becomes at once a condition of exceeding rarity. A patient, seen by WM. TAYLOR (Dublin Jour. of Med. Sciences, Sept. 1, 1903), was quite healthy previous to a fall on his left shoulder. There was no history of syphilis. After the fall his fractured collar-bone was treated for two weeks, when he came into the hospital and the pulsating tumor was noticed. The tumor was most prominent just at the site of fracture, and occupied the lower part of the left posterior triangle of the neck, extending forward underneath the sternomastoid and overlapping the broken fragments. There was pain, tingling and numbness in arm and hand, and a radial pulse much smaller than on the other side. A radiograph showed a spicule of bone projecting inward at right angles, and presumably the cause of the aneurism. In the upright position the tumor no longer seemed to pulsate, but in recumbency the pulsation was marked. In a difficult operation the artery was seized, the sac opened, the clots turned out, and a small opening the size of a large knitting needle found in the third segment of the artery. Three pairs of forceps were applied, one external, one internal and one just over the opening. Gauze was packed in to steady the forceps, and the arm supported on pillows and wrapped in wool. On the twelfth day the forceps were removed, and the patient, aged sixty-two years, is now quite well, free from pain, and has complete sensation in arm and hand. Power is gradually returning.

Rupture of the Cicatrix after Laparotomy.—Orloff has, some time ago, collected reports of 26 cases of rupture of the cicatrix after laparotomy, and to these A. N. ZEEMIN (Roussky Vrach, Sept. 20, 1903) adds two. One was a case of gastro-enterostomy for cancer of the pylorus. The abdominal wall was closed with silk sutures. Vomiting after the operation continued for over a week. Patient was fed with nutritive enemata. Sutures were removed on the ninth day. The next evening he began to feel pain in the wound after a slight attack of coughing, and by the next day the edges of the wound were distinctly separated. A double row of stitches was introduced, as well as a tampon, and, notwithstanding several attacks of vomiting, the wound healed kindly, and a firm, strong cicatrix was formed. In the second case, that of a supposed gumma of the stomach, a similar operation was performed, but the wound opened in its upper part; a tampon was inserted, but fell out; hiccough followed, and a considerable protrusion of intestine was observed. This was carefully replaced, and the wound closed again. The stitches, however, cut through, and a granulating surface was formed. Recovery was slow and unsatisfactory. It would be difficult to determine the causes of such ruptures, as the wounds, in all the 28 cases, were closed in a great variety of ways, and many materials were used in closing them. Thus some operators superimposed the sutures at once over all the layers of the abdominal wall, others resorted to double sutures; some used catgut, others silk, silkworm-gut, or silver suture; others again, various combinations of the above. Nor can pus in the wound be blamed for this untoward occurrence, as in the majority of cases there was healing by first intention, and in but few was there suppuration of the wound. Orloff inclines to the view that rupture must be ascribed only to the various causes that bring about tension of the abdominal wall, such as vomiting, cough, inflation of the intestines, etc. There are nevertheless cases in which no such causative agency could be detected by the authors. It would seem that some of the patients do not possess the necessary vitality, and are reduced by malnutrition or other causes to such a condition that their tissues become soft and unduly friable.

OBSTETRICS AND GYNECOLOGY.

Uterine Myomas.—In the choice of operation the surgeon should be governed, according to W. H. BARKER and W. P. GRAVES (Am. Jour. of Obstet., Sept., 1903), (1) by the method or route which will give him the most definite knowledge of the myoma, as to its location, size and relation to the surrounding parts; and enable him to manipulate the uterus and adnexa in his search for others, or in the removal of those already known to exist. (2) By the method or route which will enable him to do his work with little loss of blood, leaving little or no denuded surface after the operation for subsequent adhesions; and with as slight a disturbance of the surrounding viscera as possible to restore the uterus as nearly as may be to its original normal condition, as to size, position, and uniformity of shape. In considering the advantages of the vaginal or abdominal route for this work special stress is to be laid on the provision of subsequent drainage, as in the case of myomas pure and simple, there should be no necessity of drainage, provided always that the surgeon takes proper precaution for good antiseptic work and possesses the requisite skill. The abdominal route possesses all these requirements, but the skill of the operator should be

exerted to the greater degree for the fulfilment of the requirements in the adoption of such a route.

Treatment of Retroversion of the Uterus.—In an analysis of the work of Dr. Figuiera, based on the statistics of M. Doleris, M. Morisette (La Gyn., June, 1903) gives the following as his conclusions: (1) The treatment of retrodeviations favors fecundation in sterile women; (2) in recent, mobile deviations, the pessary may be employed with success; (3) the period of genital involution is truly the psychological period for the pessary; (4) where the perineum is intact and there is no lesion of the adnexæ, the Alexander operation is the one of choice. Where there are adhesions to the adnexæ, laparotomy is indicated, followed by simple abdominal fixation and transfixation of the round ligaments; (5) in the case of multiparæ where the perineum is torn, fixation should be associated with plastic operations upon the cervix, vagina and perineum; (6) in the case where retroversion is present and complicates pregnancy, medical, manual reduction of the deformity should be practiced. If this does not suffice to free the uterus from the pelvic cavity, celiotomy should be done and the round ligaments should be shortened intra-abdominally, with a view to a direct reduction of the abnormality, and for a definite cure of the deviation.

Outdoor Obstetric Practice.—An interesting report of the results obtained in the outdoor obstetric department of the University of Virginia at Richmond has just been made public by J. F. Winn (Jour. Am. Med. Ass'n, Oct. 3, 1903). The cases number 1,000 and the deliveries were all made by students of the college. The equipment of each student is similar to that provided by other institutions of a like character; interest attaches to one drug, however, croton oil, which is included in the kit, but the specific indications for its use are not stated. The work was carried out under the most filthy surroundings, but the students were compelled to observe the usual precautions as to cleanliness both of themselves and the patient. Out of the thousand cases there were but five deaths, a mortality of one-half of 1 per cent. These did not result from outside or preventable infection, the causes including eclampsia, general septic peritonitis from rupture of an old pus tube, tuberculosis and apoplexy induced by puerperal convulsions. The author believes that this low rate is also influenced by the care bestowed on the genital tract during the third stage of labor, especially as regards the time and delivery of the placenta. He is convinced that too early resort to the Credé method is largely responsible for the incomplete delivery of the secundines and the subsequent sepsis. He advises keeping the hand on the fundus, without making friction, and waiting until the fundus rises and gives to the hand the sensation of being pushed up. This may take as long as half an hour or more, but when there is no sign after three-quarters of an hour, the Credé method may be resorted to. By observing this rule they have not had any so-called retained "placentæ," and he claims that an adherent placenta was never seen. The students are taught to regard the genital tract as *noli me tangere* after the child is born, and in proportion to the fidelity with which this is followed out, will the puerperium be marked by fewer deviations from the normal.

Operative Interference in Uterine Cancer.—Cancer of the uterus is truly considered the most terrible affliction that may befall a woman; the more so as only 15 to 18 per cent. of the cases are amenable to surgical treatment. M. A. Strauch (Roussky Vrach, No. 35, 1903) finds the percentage of those cured by hysterectomy very small, though immediate death after vaginal hysterectomy has not occurred in his experience even once. Out of 100 operated cases he only knows of five in whom there was no recurrence within five years. More recently it was advised in operations for uterine cancer not to stop at the removal of the uterus alone, but to continue the exsection of the entire neighboring lymphatic structures, as was insisted upon quite recently by Wertheim, Mackenroth and others, for even those glands which macroscopically do not seem to contain any cancerous tissue will be found to be infected on closer examination; or they may simply be in a condition of chronic irritation or inflammation. The author begins the operation by preparations similar to those employed in a Cæsarean section. Under anesthesia the tumor is thoroughly curetted, or, if possible, removed by scissors. The vagina is tamponed tightly with iodoform gauze, patient placed in the Trendelenburg position, etc. Of the cases described as operated on one had cancer of the body, while in 17 the lower segment of the organ was so eaten up that it was difficult to decide as to whether he had here to deal with cancer of the vaginal portion or that of the cervix; and only 2 cases were properly vaginal cases. Of the 20 cases 4 died postoperatively, a rather high percentage when compared with the vaginal method of operating, in which there was not a single death; but unfortunately the vaginal route could be chosen only in two cases. Throughout the whole article there is a strain of very discouraging pessimism which is the more impressive as the author's conclusions are based on an extensive surgical practice of twenty years.

Prophylaxis of Postoperative Cystitis.—To avoid cystitis and its dangerous complications after gynecological operations, K. Baisch (Münch. med. Woch., Sept. 22, 1903) injects 20 c.c. (5⅓ drams) of a sterilized 2-per-cent. borated glycerin into the bladder, if spontaneous urination is impossible, on the night of operation. The catheter is introduced and as soon as the first drops of urine flow off the fluid is passed in. The patients will generally experience a desire to urinate in five to ten minutes and will empty their bladder without tenesmus. This method has proven a failure only after the Wertheim operation for carcinoma uteri, where the bladder is extensively dissected from its surroundings. Here cystitis is best avoided by washing out the bladder several times with boric acid solution, after every catheterization. This should be continued until the function is completely restored and no more residual urine remains behind.

Absence of Spleen.—Complete absence of the spleen was noticed in the case of a woman, aged seventy-three years, by C. Sternberg (Virchow's Archiv, Vol. 173, No. 3). The abdominal branches of the aorta were normal as to size and position, except that the splenic artery was very small and supplied the pancreas and finally terminated in the great omentum. Accessory spleens were not found nor was compensatory enlargement of the abdominal lymph-nodes present.

Microscopic examination of the blood and bone-marrow proved absolutely negative. Since the patient reached an advanced age in comparatively good health, another proof is offered that the spleen is not essential to the normal functions of the body.

NEUROLOGY AND PSYCHIATRY.

Bechterew's Disease.—Bechterew described in 1892 a peculiar form of curvature of the spine that is characterized by the following series of symptoms: (1) More or less immobility or at least insufficient mobility of the entire (or of part of the) spinal column without any distinct tenderness on either percussion or flexion. (2) Backward curvature of the spine, especially in the

upper thoracic portion; the head somewhat pushed forward and downward. (3) A paretic condition of the muscles of the trunk, neck and extremities, frequently in connection with an atrophy of the muscles of the spine and scapula. (4) Some loss of sensation mostly in the superficial branches of the lumbar, spinal and lower cervical nerves. (5) Various symptoms of irritation in these nerves in the form of paresthesia and pains in the spine and cervical region, as well as in the extremities, especially when the patient is sitting down. Some cases also show symptoms of irritation in the region of the motor nerves. The etiological factors of the affection are heredity, trauma and syphilis. Marie and Astie described in 1896 a similar disease to which they gave the name of "Kyphosehérédo-traumatique." In view of the fact that this disease was first described by Bechterew, Russian investigators proposed to give it the name of "Bechterew's disease." The pathological findings gave a considerable atrophy of the intervertebral plates, at times of such a high degree that some of the vertebræ grew, as it were, together. No ossification of ligaments was anywhere observed. The dura mater was thickened in the cervical region, and adhered to the intervertebral nodes at the exit of the roots. The gray substance of the cervical and thoracic portion was hyperemic; there was also degeneration of the anterior and posterior roots, especially noticeable in the upper thoracic and lower cervical parts. In Bechterew's disease there are found changes in the vertebral bodies and especially in the intervertebral cartilages, while the ligaments remain untouched. POUSSEP (Roussky Vrach, No. 32, 1903) presents a table of 28 cases which admit of subdivision into two classes: (1) Those in which the irritation of the nervous system was very prominent without any special atrophic condition, and (2) those in which the symptoms of irritation were subordinate to the prevailing atrophy. As regards the age of the patients, the majority were above fifty years. As pointed out above, syphilis was found by far the most prominent etiological factor, next to which comes heredity, cold, trauma and gonorrhea. The knee-jerk was found exaggerated in more than one-half of the cases, while in one there was complete absence of same. Complete immobility of the spine was observed in 35 per cent., partial immobility in 64 per cent. of the cases. It is distinguished from syringomyelia by the absence of the peculiar alteration of sensibility, by the various atrophic changes, etc. The disease is also to be distinguished from the so-called "spondylose rhizomélique," barring the affection of the large joints, by a whole series of phenomena of a purely nervous nature. The latter differentiate it also from various functional diseases of the spine, from senile curvature, and from deformity due to diseases of the muscles.

Multiple Sclerosis with Predominant Psychical Affection, or Possible Westphal's Pseudosclerosis.—Cases of atypical multiple sclerosis, not fully corresponding to the descriptions as given in some textbooks have been reported by many, and especially by Charcot and his disciples, and it is sometimes difficult to distinguish the cases in which the cerebral symptoms predominate from general paralysis of the insane. An interesting case is reported by J. F. KAPLAN (Roussky Vrach, No. 35, 1903) in a field laborer, thirty-six years of age, with a clean personal and family history. Caught a severe cold some seven to eight years ago, after which he was confined to bed for twelve days, during which time "he neither spoke nor ate; was in a dying condition." After convalescence could hardly walk about, acted very strangely, threatened to kill and murder the people around, and even attempted to kill his own son; it was also noticed at that time that he walked with difficulty, frequently staggered, could not keep his head straight, and his speech became impeded; has also made frequent attempts at suicide. On examination of his nervous system it was elicited that the pupils, of normal appearance, reacted well both to light and accommodation; no nystagmus; fundus oculi normal. When at rest muscles of face and tongue normal; but when speaking the pronunciation is not clear, individual words merge, as it were, one into another, and then break off; the beginning of the word is clear, but its ending loses any definite character; every muscle in the face participates in his attempts to speak, whereby the face takes on frequently a smiling aspect, evidently beyond patient's control. No bulbar symptoms. Trembling of head and muscles of arms, most noticeable when patient walks or makes any motion with his arm; the latter became so pronounced that at times it was necessary to feed the patient. Muscles normally developed; no ataxia; reflexes, both tendon and skin, exaggerated; no ankle clonus. The gait is uncertain, as if patient is not sure of his ground; the steps are unequal, either in size or rhythm, and the uncertainty grows the more embarrassing when patient has to turn about. The general psychical condition is that of dementia, and the change in his mental state dates back from the beginning of his illness. Later on he became apathetic and entirely indifferent to the surroundings; the stupidity and total indifference increased to such an extent that patient was simply leading a vegetable life. Not even the news of his child's death called out any expression on his face; he is, however, at times subject to attacks of violence, of rapidly passing nature. The author surmises that his original illness must have been one which produced distinct organic changes in the nervous system of the patient as the subsequent course of the disease shows it. Notwithstanding the absence of the classic scanning speech seen in multiple sclerosis, the defect is, however, pronounced enough not to exclude this affection, in combination with the other symptoms, such as the involuntary smiling, the absence of hallucinations, etc.; the patient's gait is somewhat paretic, and is not distinctly spastic. The case, to be sure, is atypical, and the psychical defect is rather predominating, but may not just this predominance be the characteristic property of such a class of cases? However it must be admitted that such dementia is rare in multiple sclerosis, and further study of such cases is necessary in order to establish definitely the nature of such complications.

GENITO-URINARY AND SKIN DISEASES.

Acanthosis Nigricans.—According to O. HESS (Münch. med. Woch., Sept. 22, 1903) the chief symptoms of this rare skin-disease are the typical location, the hypertrophy of the dermal papillæ, and the increase of pigment. A distinct discoloration and furrowing will develop symmetrically upon neck, breasts, navel, inguinal region, arms, genitocrural fold, axilla, elbow, hand and foot, which will progress until the areas are studded with simple or branched papillomatous elevations. The mucous membranes become covered with pale or red papillary proliferations, which frequently pain considerably. The course is progressive in some cases, the onset is marked by itching. Severe lesions of the internal organs, usually carcinoma, often terminate this peculiar disease for which there is as yet no satisfactory explanation. The treatment is symptomatic yet in one case a cure is reported after a hysterectomy for malignant deciduoma.

Quantitative Determination of Sugar in the Urine. That the Fehling test is unreliable in cases where there is present an organic combination of iron in the urine,

is the claim made by E. C. Behrends (Deut. med. Woch., 1903. No. 35). As a remedy he proposes the following method: An alkaline solution of bismuth nitrate is used which differs from Nylander's reagent in that only one-tenth the amount of the nitrate is used. The nitrate is dissolved in distilled water and then 32.747 grams of the sediment weighed out. Over this is poured 500 c.c. of double normal salt solution and the resulting precipitate dissolved by adding 50 grams of potassium sodium tartrate. Enough distilled water is then added to make a liter. Ten c.c. of this fluid is mixed with 10 c.c of urine in an Esbach tube and heated in the water bath for half an hour. It is then set aside for fifteen to twenty minutes to cool and the amount of the resulting precipitate, which is bismuth oxydul, is the index of the sugar, every c.c. of the precipitate corresponding to 1.4 per cent. of sugar.

Chancre of the Upper Gum.—Extragenital syphilis is a subject that would seem to have been sufficiently exploited by this time, still there occur cases which are of such importance not only medically, but also sociologically, that every new contribution to this subject must be welcomed by the profession. A case not only instructive, but highly interesting because of its rarity, is reported by M. A. Chlenoff (Prak. Vrach, No. 35, 1903) in a peasant woman twenty-nine years of age, who was admitted to the hospital with an eruption on the body of three days' duration, and pain in the upper gum of two weeks' duration. Patient claims to have been affected from one of her lovers who suffered from syphilis, by using his towels, tooth-brush, etc. The pain in the gum was accompanied by unpleasant sensation, but no tenderness on either eating or drinking. Examination elicited a large swelling that invaded the alveolar processes of a dark, cherry-red color, with prominent vessels on its surface, but without any erosion anywhere around it. Submaxillary glands markedly enlarged, and to an extent the sublingual. The cervical and axillary glands but little affected. The body is covered thickly by syphilitic papules, especially the trunk. The patient was given hypodermic injections of a two-per-cent. solution of hermophenol every other day, and local applications of tincture iodine with glycerin and potassium iodide. After 20 injections the patient left the hospital with the eruption somewhat atrophied, and the chancre considerably paler and absorbed. Patient continued an outdoor treatment of another 8 injections, and subsequently 16 inunctions of 2.0 of mercurial ointment. She entirely recovered, but was readmitted in a couple of months with syphilitic ulcer of the arms; pronounced leucoderma colli, while the former chancre disappeared entirely, leaving but two small cicatrices. While the diagnosis of the case leaves no doubt as to the nature of the affection, the clinical picture of the chancre presents some interesting points. According to Fournier there are two clinical types of this chancre. The first presents the usual phenomena of chancre and is distinguished only by its small size and a semilunar shape embracing two or rather three neighboring teeth; it presents either an erosion or a superficial wound, distinctly limited, smooth, even and of a dark-red color. In the other type of the chancre of the gum the erosion is not limited by a distinct, prominent border, and its bottom is rather uneven, and of a variety of colors; it is also accompanied by symptoms of an adjacent periostitis, and subjective symptoms such as local tenderness, pain, pain on touching, as well as in eating and drinking, etc. In a general way it may be said that the diagnosis of this condition is sometimes difficult and becomes clear only because of the presence of other symptoms, and especially the characteristic adenopathy. The author refers his case rather to the second class, for it resembles this type more than the other. As etiological factors various authors mention the following: Tooth-brushes, operations on the teeth and mouth, musical instruments, cigarettes, mouthfeeding, unnatural coitus per os, etc.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Changes in Spinal Ganglia after Division of Peripheral Nerve and Posterior Root.—With division of the peripheral nerves K. Kleist (Virchow's Archiv, Vol. 173, No. 3) found signs of cell-degeneration in the spinal ganglia, reaching their highest degrees during the first month and then slowly disappearing until the end of the fourth month. The lesions involve chiefly the "tigroid" substance or substance stained according to Nissl, the nucleus and the ground-substance. The tigroid substance appears as finely granular or coarse and polyhedræ or spindle-shaped masses, while the nucleus will occupy an eccentric position. After severance of the posterior root the same changes are observed, but not to such a degree. The varying appearance of the tigroid substance is most likely due to a difference in cell-structure, which probably goes hand in hand with variations in physiological function. The end stages are always complete degeneration and atrophy.

Esophageal Diverticula.—In a comprehensive article G. Riebold (Virchow's Archiv, Vol. 173, No. 3) states that traction diverticula are very frequent in adults (3.5 per cent. of all autopsies on adults and none in children under fifteen years). Their location is usually the anterior or lateral (more often the right than the left) wall at the level of the bifurcation; in four cases they were seated 5 to 6 cm. (2½ inches) higher, in one case 10 cm. (5 inches) lower, and in another the posterior wall was involved. In the majority of cases only one is found, but at one autopsy there were as many as nine. They all stand in intimate relation with indurated chalicotic or anthracotic lymphnodes. The form most frequently encountered is that of a funnel 3 to 6 mm. (1/10 to 1/5 inches) deep, but a large number of variations may be described. The shape of the opening is not constant and the longest diameter is usually directed obliquely upward. All the layers of the esophagus may participate, but usually the mucous membrane is defective. The clinical importance of these diverticula lies in the possibility of perforation and infection of the surrounding tissues. The stagnating food may set up an inflammation and progressive ulceration or else the gland will suppurate and discharge into the esophagus. The result is an enlargement of the original diverticulum or a purulent mediastinitis or perforation of the pus into trachea, bronchi, lung, pleura, pericardium or vessels. Carcinoma or tuberculosis are very apt to develop upon the scar tissue of an old diverticulum. The diagnosis during life has never been made. The fact that a glandular inflammation is apt to spread toward the esophagus and draw out its walls is best explained by an obstruction of lymph-channels which permits a retrograde transport of germs. Similar diverticula of the trachea and bronchi have also been described, but here the cartilaginous rings offer a much greater resistance than the soft walls of the esophagus. In the second group, the diverticula by traction and pressure, part of the wall of a traction diverticulum is bulged out or else the entire pouch has yielded and it would be hard to distinguish it from a pressure diverticulum were it not for the remains of glands and chronic inflammation in the neighborhood, and perhaps the deposit of coal in the walls. This group is rare and position and etiology are the same as in the preceding group. Lastly, the pure pressure diverticula claim attention especially

since their causation has been a mooted point. It is probable that the pressure of a morsel passing down the esophagus or forced expiratory acts bulge out a posterior pharyngeal wall weakened congenitally or by trauma. The muscle fibers of the inferior constrictor will yield so that a hernia of the mucous membrane can readily take place. After the bag has attained a certain size the pressure of the contained food will enlarge it more and more. The diagnosis is fairly certain and treatment is also satisfactory; formerly one-fourth of the cases died of starvation or aspiration pneumonia, with pulmonary gangrene, but now a large number are amenable to operation. Lower down in the esophagus, especially on its anterior and lateral wall, above physiological stenoses, similar pathological lesions are sometimes seen, and it is likely that here also a congenital weakness is at fault.

Necrobiotic Changes of Blood.—By keeping freshly-drawn human blood in hermetically-sealed capillaries up to one hundred days, K. Bodon (Virchow's Archiv, Vol. 173, No. 3) could study the resistance of the various cells and the change which they undergo with time. It appears that the large unicellular elements of Ehrlich and the transitional forms disappear first; then follow the large lymphocytes and the multinuclear leucocyte. The neutrophiles seem to be more resistant than the acidophiles. Last of all the small lymphocytes and the red cells are destroyed. The red cells become smaller and thinner, their protoplasm splits up and umbilication disappears, and in the oldest tubes there is complete disintegration. With stains there is polychromatophilia, hypo- up to complete achromatosis. The appearance of granules within the protoplasm, described in lead poisoning and other diseases, does not seem to be a necrobiotic phenomenon. The leucocytes undergo plasmolysis, the granules are irregularly distributed within the cell-body and show hypo- and metachromatosis, and finally the protoplasm breaks up completely. Eccentric position of the nucleus with change of contour, disappearance of nuclear network, pyknosis, perichromatosis are also observed. On the whole the nuclei and the specific granules resist destruction longer than the protoplasm.

Splenic Leucemia in a Calf.—An interesting observation is recorded by D. A. DeJong (Virchow's Archiv, Vol. 173, No. 3), who noticed all the lesions of splenic leucemia in a calf five weeks old. The organs were icteric, the spleen as large as in an adult animal, and the blood showed an increase in large uninuclear elements with microcytosis. Since neither lymph-nodes nor bone-marrow gave evidence of any pathological lesion the case must be looked upon as a purely splenic type. The jaundice could only be explained by an increased destruction of red cells in the blood current, since no obstruction in the biliary passages was present. In all probability the leucemia was congenital.

Suprarenals in Congenital Syphilis.—The suprarenal bodies do not frequently show pathological lesions in congenital syphilis, but occasionally gummata are found both in children and in adults. N. Gulecke (Virchow's Archiv, Vol. 173, No. 3) has discovered a new lesion which seems to be characteristic for syphilis. Corresponding to macroscopically visible, yellow, cheesy foci he found irregularly distributed throughout the cortex small and large areas with necrotic cells. Their usual seat is the outer portion of the zona fasciculata and the zona glomerulosa, and their shape suggests an infarct. In the center the shape and arrangement of the cells can still be discerned while the periphery is sharply demarcated from healthy tissue, and is surrounded by a zone of leucocytes. Fat, lime and pigment are deposited, but cheesy degeneration is absent. In other parts of the cortex there were small accumulations of round cells, and increase in connective tissue, and a slight degree of periarteritis. These lesions were not found in 15 non-syphilitic cases examined, while in 7 syphilitic necrotic foci were present in 3. They are not due to arterial changes, but probably represent a direct destruction of the parenchyma by the syphilitic virus, yet not absolutely specific for syphilis.

Multiple Myelomata.—According to the description of S. Saltykow (Virchow's Archiv, Vol. 173, No. 3), multiple myelomata consist of round cells which closely imitate normal marrow cells and which are arranged into irregularly shaped fields by means of narrow bundles of connective tissue. When the cells are closely applied to each other they may have an angular form. The nuclei may be small and dark without distinct structure or large and pale, with nucleoli and chromatin granules. The nucleus generally makes up the greater part of the cell body, but in other places the cells closely simulate flat epithelial elements. Eosinophile granules may be present in abundance. Some nodules consist almost entirely of blood-spaces lacking an endothelial lining, and filled more or less with tumor-cells; this explains the occasional presence of a large number of colorless elements in the blood. The marrow in the immediate neighborhood of the tumor has a similar structure with many giant and fat cells, but generally lacking the wide blood-channels. In other organs, especially in the liver, there may be accumulations of myelocytes. Macroscopically the tumors in the bone possess a distinctly red color due to their vascularity and to hemorrhages, except in the more peripheral portions. Bone is absent, except on the inner surface of the periosteum, which is continued unchanged over the tumor.

Rupture of Gall-bladder after Carcinoma.—B. Huguenin (Virchow's Archiv, Vol. 173, No. 3), performing an autopsy on a man fifty-eight years old, discovered a papilliferous carcinoma, rich in dilated blood-vessels at the junction of the cystic and hepatic ducts. The immediate results were a retention of bile with interstitial biliary hepatitis, dilatation of the biliary passages with moderate new formation of the smallest canals and papillary proliferation of their epithelial cells. The cholemia resulted in hemorrhages all over the body; the most severe bleeding took place from the vascular tumor itself and led to rupture of the gall-bladder, inundation of the entire peritoneal cavity and death. The numerous necroses in liver and pancreas were probably due to some toxin circulating in the blood. In the pancreas they were converted into small cysts, probably owing to autodigestion.

EYE, EAR, NOSE AND THROAT.

A Cause and Cure of Hay Fever.—It is generally admitted now that there are at least two factors of causation in every case of hay fever, the neurotic condition of the nervous system and the exciting cause. Besides these some derangement of the mucous membrane of upper air passages is found in many instances. F. E. Stowell (N. Y. Med. Jour., Sept. 5, 1903) being a victim of this disease himself, and acting upon the belief that it was a disease of the nervous system and not due to some irritant deposited upon the nasal mucosa began to search for some factor which was present at this time of the year and absent at other times. He hit upon the possibility of an influence from the strongly actinic rays of the sun at this season affecting the very sensitive ciliary nerves and reflexly causing the paroxysms of an attack of hay fever. Acting upon this

mode of reasoning he began to wear colored glasses and found that he was almost immediately relieved. The condition at once returned if he went out without wearing them. He has since improved two or three other cases but is anxious to have the simple experiment tried by others to determine what percentage of cases can be helped in this way.

Rational Treatment for Mouth-breathing.—Diseases of the upper air passages are so common in this part of the country that the climate is held responsible by many as being the chief factor of causation. To be sure a severe climate must necessarily greatly affect mucous membranes which are easily influenced by rapid changes but the improper use of our respiratory apparatus is urged by W. H. Fitzgerald (Med. Rec., Sept. 5, 1903) to be fully as potent a factor as the severity of the climate. So many people are either confirmed or moderate mouth-breathers and all these must necessarily have more or less constant nasopharyngeal catarrh. Many people are not conscious that they breathe other than through the normal passages and will not admit it until you convince them by engaging them in conversation or have them read for you when they will be surprised to learn that they have spoken several sentences or read several paragraphs without once closing their mouths. They are the ones who after lecturing or reading aloud, or perhaps singing, are dry of mouth or husky of speech. Douches are usually harmful in such cases. The nose needs more air not more water. Of course the only rational means of curing such a condition is by removing all growths and deformities which encroach upon the normal passages. This done, the cases of habit mouth-breathing demand care and attention. The nose must be exercised. The patient is ordered to breathe forcibly through his nostrils at the rate of one inspiration per second for ten seconds, to be repeated eight or ten times during the day. This will more than compensate for the discontinuance of the spray. At night a mouth-guard should be worn for weeks. The most satisfactory guard is perhaps a small piece of adhesive plaster worn vertically across the center of the mouth. Great care should be shown even in babyhood to teach the child to breathe through the nose, the possibility of obstruction being eliminated.

Hemeralopia from Parotiditis.—Among the ocular complications of parotiditis, hemeralopia has not hitherto been reported, writes A. Campani (Gazz. Osped., Aug. 30, 1903), who describes a case in which inflammation of the parotid subsided upon one side, only to be followed by inflammation of the opposite gland and development of dimness of vision toward evening, to which succeeded a total night-blindness; though vision was unimpaired during the day. In the absence of any ocular lesion to which this symptom might be attributed, the author places this case in the category with those hemeralopias of toxico-infectious origin. The author's idea as to the origin of the affection in this instance is borne out by the disappearance of the symptom during convalescence.

THERAPEUTICS.

Antimony in Lung Affections.—If given properly, A. Robin (Bull. General de Therap., Aug. 15, 1903) considers tartar emetic a remedy of almost specific properties in capillary bronchitis and bronchopneumonia. It is best to first withdraw 200 to 250 grams of blood and then to give a tablespoonful of a solution containing 40 centigrams of the drug to 150 grams of water. With a moribund and cyanosed patient with thready pulse, supervision must be very careful and the administration should be stopped as soon as vomiting or diarrhea appear, or when dyspnea increases, collapse supervenes, or the surface becomes cool. Opiates should not be prescribed the same time. It is rare that tartar emetic can be given through an entire day. Generally one must stop and begin again the day after, but with smaller doses. After the severe symptoms have disappeared, another preparation of antimony, the white oxide, does good service in aiding expectoration. While antimony is excellent in forms of pneumonia, where there is a tendency to suffocation, it is a mistake to employ it as routine treatment in this disease.

Oxygen in Surgical Affections.—M. Thiriar (Bull. d. L'Acad. Royal de Med. de Belg., No. 6, 1903) believes that in oxygen we have an excellent body for combating surgical infections without at the same time injuring the cells. He leads the gas directly over the raw surfaces and into the infected tissues, so as to bring about a continuous oxygenation. In the following affections a rapid cure was brought about: (1) Suppurative arthritis of the knee. The pus is evacuated by lateral incisions and the gas then passed through the joint. (2) Purulent and tuberculous peritonitis. (3) Empyema. (4) Gangrene with the formation of gas. (5) Furuncles, carbuncle and anthrax. The gas is here frequently injected into the dead tissue and the surrounding induration.

Protargol in Gonorrheal Disease of the Cervix and Body of the Uterus.—Protargol, as is well known, was originally recommended by Neisser in gonorrhea, in which it was used at first in one-quarter-per-cent. solution, increasing the strength up to one-half per cent. to one per cent. Since then the drug has also been employed in gynecological practice, as well as in diseases of the eyes. V. N. Orloff (Roussky Vrach, No. 31, 1903) used it in 25 women, of whom six had disease of the cervix and eight also affection of the mucous membrane of the body of the uterus. As the infectious principle of gonorrhea tends to spread by continuity of tissue, we can seldom see infection of the uterine mucous membrane without disease of the cervix. The author had to deal mostly with recent infection, so that permanent alterations, either in the body or cervix, had not as yet taken place. Bacteriologically 13 cases gave the diagnosis of gonorrhea, while in the rest the nature of the infection was made out from the undoubted past history. Treatment consisted in swabbing either the cervix or the uterine mucosa with a protargol solution of five per cent up to 15 to 20 per cent; at no time was there ever noted any special irritation. After the swabbing or the injection a glycerin tampon was usually placed at the mouth of the cervix, which was left there for six to eight hours, to be followed by a sublimate or boric acid injection. The treatment was usually conducted every third day. Improvement was noticed after the third or fourth sitting, as was manifested by the diminution of the leucorrheal discharge, both in quantity and in its character. The gonococci disappeared, and the treatment was then limited only to the glycerin suppositories. No complications of any kind were ever observed. There was no marked improvement in diseases of the tubes.

Treatment of Erysipelas.—The contagious character of erysipelas had been known long before its pathogenic bacillus was discovered, and could be easily verified by the extensive prevalence of the disease in certain wards of hospitals. It was Fehleisen, who, in 1883 discovered the streptococcus that causes the disease, and since that time dates our wider familiarity with this affection; its treatment, however, is as yet a more or less debatable ground, for on the one hand prominent authorities recommend the expectant plan,

while on the other a whole array of therapeutic measures has been placed at our disposal to combat the further spread (once the disease has invaded the tissues) of the infection. P. PH. SMOLITCHEFF (Prakt. Vrach, Nos. 29 and 30, 1903) brings forth the names of such surgeons as Dieulafoy, König, Hüter, Wolff and others, every one of whom recommends a different line of treatment. This diversity of views is explained by the fact that a majority of investigators consider erysipelas a self-limited and comparatively benign disease, which can often be treated locally with success, and for this we must have a remedy that is readily absorbable by the skin, and, on being taken up by the deeper layers, is powerful enough to kill the pathogenic streptococcus, or, at least, prevent its further pernicious activity; it must at the same time, when taken up by the systemic circulation, neutralize the existing toxins and fortify the living cells against their invasion, inviting meanwhile leucocytosis to more successfully combat the attack of the enemy; clinically such a remedy should bring about diminution of pain, swelling and heat, prevent the further spread of the erythema and cause the fever to fall perceptibly. As satisfying all the above demands the author finds the alcoholic tincture of iodine of the greatest importance. In view of the fact that the author bases his opinion on experience of twenty years, due weight must be attached to it, for he considers this preparation of iodine specific in a measure that quinine is considered in malaria. The following combination has been especially useful in the author's hands:

℞ Tr. Iodi.....25.0 grams.
Ol. Camphor
Ichthyoli .....aa 12.5 grams.
M. Sig. For external use. Shake before applying.

The application to be successful should be done very thoroughly, and repeated when necessary. Twice a day may be sufficient; if not, the application is done three times daily. Even phlegmonous cases seem to be beneficially affected by the drug.

Empyroform.—Empyroform, a condensation product of tar and formalin, is a dry, non-hygroscopic brownish powder of slight odor. It is insoluble in water, but dissolves readily in acetone, alkalies and chloroform. Employed as such or mixed with zinc and starch it forms an excellent dressing for weeping eczema, according to B. SKLAREK (Therap. d. Gegenw., July, 1903). Other ways of applying it are as ointment, paste and varnish. The application is generally very pleasant, since the itching stops rapidly. Irritation and intoxication, such as fever, vomiting, diarrhea and green urine has never been observed. Patients who cannot stand tar will readily tolerate empyroform if the strength is increased very gradually. Good results were also obtained in psoriasis, prurigo and trichophytosis, and for all forms of eczema it must be regarded a specific far superior to tar itself.

Influence of Nutritive Enemata on Peristalsis.—By studying the peristaltic movements of stomach and intestines in cats that had received nutrient rectal enemata and whose peritoneal cavity was then opened under water, O. LOEWE (Zeitsch. f. klin. Med., Vol. 50, Nos. 3 and 4) finds that with a sufficient amount of opium the small intestines and the stomach will not participate in the movements of the colon and rectum so that the danger of hemorrhage would not be increased in gastric ulcer or duodenal affections. Since, however, the larger part of the injections reach the ileocecal valve, there would be considerable risk in perityphlitis and typhoid. Finely suspended particles, such as dioplets of oil, may rapidly ascend in the gastro-intestinal tract and even reach the esophagus without exciting peristalsis owing to osmotic processes. The danger of a hemorrhage would not be increased by this if non-irritating substances only are used. The influence of injections upon gastric and intestinal secretion has not yet been studied sufficiently, yet it is probable that certain substances as alcohol can stimulate secretions without necessarily interfering with physiological hemostasis.

Phorxal, a New Iron Preparation.—This remedy, but lately introduced for use in anemia and chlorosis, is very highly spoken of by TAUSCH (Berl. klin. Woch., 1903, No. 38). It is a mixture of albuminoid bodies made from the blood cells of cattle and contains a number of organic combinations of iron and phosphorus derived from the hemoglobin, the lecithin and the nucleoproteins of the blood. It comes in the form of a fine powder, odorless and almost tasteless, and soluble in watery liquids. The albumin content is about 95 per cent. The iron is united to an organic group of atoms, derived from the hemoglobin, and one of the advantages of the preparation is that the action of the gastric juice does not disintegrate the material and forms a muriate of hematin, as is the case with the ordinary hemaglobin preparations. It is of value in primary and secondary anemias, and also in those combined with nervous exhaustion. In the latter case its nutritive properties are also to be considered and the usual daily dose of 6 to 10 grams may be doubled or trebled. No unpleasant after-effects were noted in any of the patients.

Treatment of Burns with Glycerinate of Tannin.—In the treatment of burns of whatever degree M. CAPURRANO (Gazz. Osped., Sept. 13, 1903) has found the glycerinate of tannin the most satisfactory substance for local application. If the burn is of the second degree, he empties the vesicles of all fluid and then applies glycerin and tannin in a 50-per-cent. solution, and covers the whole with a dressing of gauze and cotton. The medicament is reapplied several times during the day without removal of the gauze; this being left permanently in place till it becomes detached spontaneously upon formation of the new epithelium. In third-degree burns, sloughs are removed and the same dressing applied. The author attributes the beneficent effect of this treatment to the power of the tannin to coagulate the albuminous substances of the tissues and thus form a protective coating; and also to the antiseptic qualities of both tannin and glycerin.

Gastric Contents in Gastroptons.—Although it has been recognized by all observers that the gastro-intestinal symptoms are usually the most marked manifestations of enteroptosis very little work has been done in regard to the motor, chemical and sensory disturbances of the stomach in this condition. T. R. BROWN (N. Y. Med Jour., Sept. 26, 1903) has made careful examinations of the stomach contents in 20 cases of gastroptosis and for purposes of comparison has divided them into three series: Those with slight dilatation, those with moderate dilatation, and those with considerable or extreme dilatation. Nearly all cases gave marked symptoms of neurasthenia, the character and severity of the symptoms not depending upon the amount of dilatation. Although the series is a small one the results which he obtained would suggest that in simple gastroptosis there is a slight diminution in the amount of free hydrochloric acid in the majority of cases; where the dilatation is moderate the free hydrochloric acid is still further reduced, while in those cases associated with marked dilatation an absence of free hydrochloric acid is the usual occurrence. Gastroptosis *per se*, therefore, seems to lead to very slight diminution of the free hydrochloric acid.

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PRESENT NEEDS OF THE MEDICAL PROFESSION.

IN his address as the retiring President of the New York State Medical Association, delivered at the recent meeting of that body, printed in full in the November number of the *Journal of the Association*, Dr. Frederick Holme Wiggin calls special attention to certain crying needs of the medical profession in our generation that must be attended to if there is to be any amelioration of evils long complained of, but still continuing.

He shows that although much has been done to organize the medical profession in this country there are still, according to the secretary of the American Medical Association, more than seventy-five thousand physicians in the United States who are not at present members of any medical organization. If present-day evils are to be eradicated, more universal union of the profession is absolutely demanded. How this can be brought about remains one of the serious problems that those who have the best interests of the medical profession at heart must endeavor to solve.

Dr. Wiggin considers that it is evident that there is a necessity for a change in the form and attractiveness of existing medical organizations, if it is desired to unite the members of our profession in a few strong and closely allied societies. He quotes Sir Victor Horsley, M.D., who, in a recent paper, said "Organizations, medical or otherwise, are purely temporary; their only purpose is to meet the needs of the moment and when those organizations fail to keep pace with the natural evolution of the circumstances under which we have to live, it is quite clear that we ought to reconstruct the various machines that we have in operation." As Dr. Horsley has had very extensive experience in recent years as to medical organization, in various attempts to reorganize the British Medical Association in such a way as to make it effective for professional purposes, his words should go far in the matter.

He considers that at the present time, there are two professional requirements, social and scientific. Under the social requirements are placed the right to practice, defense from unjust attacks and the enforcement of our rights by the prosecution of illegal physicians.

Here in New York, much has already been accomplished beyond what has ever before been attempted as regards some of these social requirements. The defense of physicians against blackmailing suits for malpractice is now assumed by the New York State Medical Association for all its members, and already the rule is that, in most cases, suits never come to trial, for the plaintiff realizes the futility of fighting legally with a large and powerful medical association and also feels that much of the sympathy that ordinarily goes out to the plaintiff on the part of the jury in these cases is neutralized by the fact that the defendant is a physician in good standing and that brother physicians are united in his defense.

When medical societies generally shall have adopted this system introduced by the New York State Medical Association they will doubtless see the same encouraging increase in membership that has followed the diffusion of the knowledge with regard to defense against blackmail here in New York State.

Undoubtedly there are other features of medical society life that will admit of improvements calculated to make the membership of these bodies not only larger but more united. As at present constituted, proceedings are often too formal and the social side of organization is not sufficiently cultivated. Commonly to have members of the profession meet on a plane of sociability is to get rid of many of the temptations to friction in practical life and obviate in the easiest possible way by prophylaxis infractions of medical ethics.

While meetings are primarily intended for mu-

tual help from a scientific standpoint and for the rapid, easy diffusion of medical advances, it must not be forgotten that physicians do not cease to be examples of the animal sociale and opportunities for the cultivation of the amenities of life must be afforded.

The close union of interests that could be thus secured, if all the practising physicians of this country were brought into intimate contact with brother practitioners, would redound not only to the benefit of the profession but also to that of the public by more effectual regulation of medical abuses. Those sincerely interested in medical advance and in the public welfare owe it to themselves to spare no effort in this direction with the purpose of securing efficient medical union as the greatest crying need of our time, and in itself the solution of most of the other medical abuses of which we hear so much complaint.

GEOGRAPHY AND INSANITY.

Mental disease as a medical entity and insanity as a social disorder should be regarded separately if a due appreciation of the many features, medical and sociological, is to obtain.

It has been the custom of many who have not borne these distinctions in mind to misinterpret statistical inquiries bearing on this subject not only in this country, but in Europe also. As a result there obtains a widespread belief that insanity, as a medical entity, is greatly on the increase, whereas a much more correct interpretation would be that the great increase in the number of inmates of asylums is due less to medical than to social factors which are capable of putting an entirely new face on the interpretation of the statistics.

One of the most apparent of those social factors is the diminishing dread of putting one's friends in a madhouse. Modern palaces with all the conveniences of our best hotels are now offered to an indigent population and it is little wonder that this single feature has encouraged the placing of many in institutions who heretofore have been taken care of at home and have not entered into statistical summaries.

A still more important factor is correlated with the former. The increasing population causing the fierce combat in urban communities drives unfortunate sub-producers out of a family circle, the privilege of which, by reason of many ties, they have been permitted to enjoy. From being family dependents they become community parasites and thus contribute to swell the apparent tide of increase. Other and more complex social factors are constantly at work all tending in the same direction and lead to the hasty assumption on the part of the lay public of an unparalleled increase in the amount of medical insanity.

At the present time there is almost no method by which the relative importance of these factors may be ascertained. Our statistical methods in medicine are crude beyond belief, and it is more than doubtful that without an unpractical increase in their complexity can trustworthy results be obtained. Given those we do possess, however, it is significant and hopeful that the figures of the United States Census Bureau can be made to yield a number of important preliminary results leading to a more correct understanding of some of these social factors, and what is still more important, the interpretations seem to afford sufficient ground on which to base rational legislation looking toward the amelioration of some of the unnecessary consequences that our country as a whole must suffer from existing social regulations.

The study to which we refer is on the "Geographical Distribution of Insanity," first published in part, in the *Journal of Nervous and Mental Disease* and now completely, with illustrative maps, in the *National Geographical Magazine*, October, 1903, by Dr. William A. White, the recent appointee to the superintendency of the Government Hospital for the Insane at Washington—a fit preliminary study certainly for one in such a central position.

The influences of climate, natural physical topography, rain-fall, and other purely meteorological conditions are severally considered and are very wisely referred to a secondary and mediate position in the interpretation of the geographical distribution of these diseases. In the mental factors involved in the struggle for existence are to be found the primary causes of mental deterioration and breakdown; concomitant conditions of civilization being responsible. One of the most apparent features connected with the movement is the concentration of population in a certain restricted area. The North Atlantic division bears the brunt of the evil effects of this massing of struggling humanity—particularly in the large cities; the proportion of insanity being in direct ratio with this larger factor. The movement of the population, both as a factor of growth and as a factor in mental decay, has certain features in common, which are well brought out in Dr. White's studies.

We cannot summarize, save at great length, this careful and thoughtful presentation, but the question of the distribution of insane immigrants is of practical legislative interest. Dr. White shows that fifty per cent. of the 25,000 insane of New York State are foreign born. This has resulted from the indiscriminate taking in of the offscourings of Europe. This—unrestricted immigration—is one of the great ulcers in the social disease of insanity—only exceeded by the greatest curse that can afflict a nation—war.

We can commend this paper most earnestly to physicians, politicians, and legislators as one worthy of the most careful consideration in the study of the relation of mental breakdown to healthy national life.

EDITORS AND THEIR CONTRIBUTORS.

We sympathize with the attempt of the *Boston Medical and Surgical Journal* to extricate itself from the embarrassing position in which it recently placed itself by publishing a pseudo-scientific paper on the ill health of the historian, Francis Parkman. The paper was an exceedingly ill-conceived and ill-executed attempt to show that Parkman owed his poor health to the alleged fact that he had not worn the proper kind of spectacles. It was in line with a series of papers by the same writer—a Philadelphia ophthalmologist—in which the desperate attempt has been made to attract attention to an overridden theory by affecting to show that Darwin, Huxley, Carlyle, Wagner, and some other celebrities were the victims all their lives to their having neglected to correct an alleged eye-strain.

With the character and purport of these papers we do not intend to concern ourselves in this place. We are content to leave them to the judgment to which the scientific world will undoubtedly subject them, and to the oblivion to which it will eventually consign them. We have no relish for the task of writing them down. Such would be a work of supererogation in the case of literary products which are foreordained to perish. The moral we wish to point is one which concerns the relation of an editor to his contributors.

We take it as a fact that an editor's duty does not end with his merely disclaiming responsibility for the opinions expressed in a paper which he accepts for publication. His duty certainly does not end there. When he publishes a paper he, of course, does not assume responsibility for the opinions conveyed in it, but he does assume some measure of responsibility for giving them currency. Otherwise the editorial function would be reduced to the mere task of *accepting*, instead of *selecting*. The selective function is, in truth, one of the highest functions of an editor. In it are involved important duties to his contributors, to his readers and to his journal.

It is not always the simplest matter in the world to distinguish the chaff from wheat in the articles contributed, nor can the editor always have the clairvoyant power to detect the many motes that mar some productions. But it is one of the most important of his functions to try to detect the lack of both moral and scientific qualities in the papers that are submitted to his judgment. Herein lies a fine ethical question, in the solving of which the editor has a profound duty to his readers.

The subject is clearly illustrated in the case of the *Boston Medical and Surgical Journal;* although we do not doubt for a moment that our contemporary is suffering from a temporary lapse of judgment rather than from an intentional fault. Having published this questionable paper, it indulged in some mild critical comments, and was immediately taken to task by the writer of the paper, who insinuated that the editor in criticising one of his contributors was guilty of a discourtesy to a guest. The contention is, of course, absurd; and, moreover, it has nothing to do with the question of the health of the historian Parkman, or with the kind of eye-glasses he wore. It has also nothing to do with the question of the eye-strain of Mr. Darwin or Mr. Huxley or anyone else, nor even with the "thousands of cases" which have been quite miraculously cured of many frightful diseases by the imposition of Philadelphia spectacles. But it has the desired effect of putting the editor on the defensive, and he is disgusted to find that he must use his critical faculty to defend himself, instead of having originally used it to consign the author's screed to the waste-paper basket.

We live in just the age for these things. The times are prolific in all sorts of "healers" who play their antics, literary or oratorical, before the public in their own ways. Dowie and Mrs. Eddy are, of course, outside the pale of rational criticism; but unfortunately there are spectacular prophets within the ranks of the medical profession itself, and these do not scruple to distort facts, to originate fantastic theories, to use exaggerated language and to indulge in coarse invective, Dowie-like, against those who can detect at

a glance their crude follies. Criticism is wasted upon such extremists as these; but every medical editor should know, what the *Boston Medical and Surgical Journal* is now finding out, that one of his duties is to protect, as far as possible, his readers by excluding from his columns those papers that do not bear the stamp of conscientious methods of analysis.

THE REAL PLACE OF ALCOHOL IN MEDICINE.

An aspect of the subject of the physiological effects of alcohol, that appears to be ignored or neglected by those who have done most to illuminate it, is its course and chemical changes after ingestion.

It is well known that alcohol is rapidly taken up by the stomach and intestinal branches of the portal vein, and thence is conducted to the liver, where it is partially or wholly oxidated. In the instances when a quantity is imbibed which is in excess of the capacity of the liver cells to oxidate, the surplus alcohol, being passed on to the heart and general circulation, then recommences oxidation after the return from the lungs to the left heart, which continues until it is consumed.

Alcohol is a very high oxidant, *i.e.*, it is very inflammable and possesses a high affinity for oxygen, also it is very diffusible, and environmental bodies are very prone to become impregnated by it.

When alcohol is ingested, diluted, or in combination with foodstuffs, its absorption and oxidation are very much slowed and the saturation of the other substances, by the alcohol, results in a combined oxidation of average duration and intensity, both consuming together. Thus we have illustrations of the influence of diffusibility upon combustion. In sweet wines and beer we have examples of this slower combustion.

In whisky and brandy we have illustrations of highly alcoholic non-saccharine beverages, which when imbibed undiluted, and consumed in moderate quantity, undergo active portal combustion, thus utilizing more or less of the available oxygen of the portal blood, or, when taken in immoderate amounts, in exhausting the portal blood, and hence depriving the tissues of oxygen, adequate for their normal katabolism, and serving simultaneously in thus lowering the general volume of blood oxygen.

We have vivid illustrations in habitual drinkers of general fatty overproduction and especially fatty degeneration of the liver cells; and in heavy drinkers, of the above, together with endocarditis of the left heart, and sclerosis and atheroma of the aorta and arteries, and capillary fibrosis. The general suboxidation is attended with general tissue softening and more or less colloid degeneration, which, together with urea and uric acid excess, are the principal causes of vascular obstruction and high blood pressure. These conditions may also be aggravated by the ingestion of meats containing an excess of uric acid, when the systemic oxidation is too low to accomplish its combustion; and by other associated causes of lowered oxidation.

It has long been observed that gout is common to sweet wine and beer drinkers, and that the imbibers of the more diffusible and higher oxidants whisky and brandy are immune. Thus it is that highly diffusible liquors saturate, and enhance the oxidation of, the less oxidizable foods, and the colloid and uric acid products of the body suboxidize disintegrations, while those in sugar combination, owing to their lower diffusibility, but yet of higher combustibility than other foods, serve by their hyperactive combustion, in thus depriving other, principally the nitrogenous foods, of an amount of oxygen adequate to their complete metamorphosis.

The fact that alcohol lessens general oxidation and hence the general metamorphosis of tissues and foodstuffs, and thus acts as a "saver of proteids," does not warrant the statement that alcohol is or acts as a food. It appears to be a great mistake to confound or place in the same category, the elements of nutrition, and agents which cause a stagnation in the processes of katabolism of the tissues, or of the oxidative metamorphoses of foodstuffs, for, manifestly, these latter ones are pathogenic processes and lead to grave maladies.

Certainly, the supply of food, and the processes of its metamorphoses, are not analogous and neither can it be said that nutrition can be maintained or even sustained by retarding oxidation. It is observed that many diseases of suboxidation are attended by wasting and even marasmus; in fact, the increase of lean tissue, by such measures, is rarely if ever attained, while conversely the body-weight, thus heightened, is due to fatty deposit, more or less of which is at the expense of lean tissue. A diminished appetite thus produced, while it lowers the demand for food, does not maintain the same nutrition, as though the additional food had been ingested and normally appropriated by the tissues. In accepting protoplasm as the bases of life and index of nutrition, we must reject alcohol as a *food* or nutrient.

That alcohol does by its superactive combustion consume the available oxygen of the portal blood, and thus lower general oxygenation, is attested by the sclerosis (burns) of the hepatic cells and the lowering of the general temperature following its ingestion. The immediate effect of alcoholic beverages is increased warmth, parallel to its alcoholic percentage content, followed by a corresponding fall of temperature.

The true place of alcohol in medicine, then, is as a transient, highly diffusible stimulant, incident to its active portal oxidation, and *directly,* as an oxidant, for the purposes of clearing the portal circulation and for assisting the hepatic combustion of certain foods, which, as above mentioned, is accomplished by the more diffusible (highly alcoholic) liquors.

In clearing the portal circulation the active combustion of alcohol acts similarly to that of the fruit acids, which are so popular among hearty eaters for this purpose. For the restoration of appetite and digestive ability, which formerly was afforded by an orange or lemon, the advanced epicure finds the more highly diffusible and combustible cocktail necessary, with which to precede his meal.

Medical men can and do make legitimate use of alcoholic liquors for the above therapeutic ends, and by regulating the amounts and varieties, the time of taking, in relation to food, etc., maximum good and minimum evil can be attained, in appropriate cases. Continued tippling and periodic sprees are almost equally degrading to the body as a whole. The ignorant or rash uses of alcoholic beverages are the chief causes of mischief which is due to them. There can be no doubt but what all points taken into consideration, the race as a whole would be far better off without them.

The many diseases due to inebriety, it will be observed, are of the degenerative type and are all due either to hypercombustion (fibrosis, sclerosis) or to suboxidation, viz., all kinds of degradations and degenerations of the brain, nervous, muscular and vascular systems.

ECHOES AND NEWS.

NEW YORK.

The D. W. Harrington Lectureship, University of Buffalo.—The Medical Faculty of the University of Buffalo has chosen Dr. Samuel J. Meltzer, of New York, to deliver these lectures for 1903. The subject selected by Dr. Meltzer is "Edema, a Consideration of the Physiological and Pathological Factors Concerned in its Formation." The lectures will be delivered in the Medical College, November 30, and December 1, 2, and 3, at 5 P.M. The medical profession is cordially invited to attend. These are the first lectures given on this foundation. Lectures will be given as often as the income from the fund will warrant.

Professor Lefferts' Gift to Columbia Medical School.—Dr. George M. Lefferts, who has announced his intention of retiring from the Chair of Laryngology on June 30 next, when he will have finished thirty years of academic service, has presented to the University his extensive and valuable collection of apparatus for illustrating the teaching of laryngology and rhinology. The Trustees ordered that the apparatus should be hereafter known as "The Lefferts Collection."

New Professors at Columbia.—Five new professors in medicine were appointed, the first two of whom are to have seats in the Medical Faculty. The appointees are Drs. Samuel W. Lambert, Professor of Applied Therapeutics; Joseph A. Blake, Professor of Surgery; George E. Brewer, Professor of Clinical Surgery; John S. Thacher, Professor of Clinical Medicine; Frederick Peterson, Professor of Psychiatry.

New Hospital Pavilion.—At a recent meeting of the Board of Managers of St. Luke's Hospital, the president, George MacCulloch Miller, announced the desire of Mrs. Margaret J. Plant, to erect and present to the institution an additional pavilion, thus pursuing the line of development laid down in the plans for the erection of the ten pavilions, five of which have already been built. The new pavilion, as announced in the Medical News of last week, will be for the care and treatment of private patients, and will be located on the southeast corner of the block overlooking Morningside Park. Mrs. Plant's gift solves a problem of long standing for St. Luke's. Since the hospital was moved from Fifty-fourth street to Cathedral Heights, private patients have been cared for on the two upper floors of the Vanderbilt pavilion. The facilities for the care of patients in this building have been inadequate, and the nurses have been cramped in their quarters. The development of the hospital was absolutely checked by this situation. Now the management will be enabled to open wards which, by reason of lack of income have been closed, and thus enlarge the charitable work of the institution.

Obituary.—Drs. O. A. White and L. P. Walton.—At a meeting of the Medical Association of the Greater City of New York, held November 9, 1903, the report of a committee, appointed to prepare a suitable minute on the death of Dr. Octavius A. White, was received and adopted. It was devoted to a eulogium of the character and eminent services of the deceased, and included the following tribute quoted from the Oakland (Cal.) *Tribune*, of May 28, 1903: "There has just died in New York, one of the greatest of the heroes produced by the Civil War; yet his name is absolutely unknown to ninety-nine out of every hundred of his countrymen. This hero was Dr. Octavius A. White, famous as a yellow fever expert. When yellow fever attacked the Federal prisoners at Florence, South Carolina, his attention to them was tireless. All during the terrible years of civil strife he was indefatigable in healing the sick and wounded of both armies, and risked his life and health in the pursuit of his high calling with greater frequency and daring than any soldier in the field. It is a commentary on the unequal division of the awards of merit, in popular estimation, that the heroism of such a man should be passed over and forgotten by the mass of men, while the deeds of hundreds of lesser men, who sought

to slay or win glory on the battle-field, are commemorated in marble and bronze. . . . We raise monuments to those who kill, and leave unmarked the tombs of those who cure." The conclusion of the report was as follows: "With a public life full of noble achievements for suffering humanity and a home life illumined by the most charming of domestic traits, his memory will be cherished for years that are to come by all who knew him. Your Committee, in presenting this minute, unanimously offer the following resolutions:"

Resolved, That in the death of Dr. Octavius A. White this country and community have lost a valued citizen and our profession of medicine an honored member.

Resolved, That we extend to the bereaved family of Dr. White our profoundest sympathy for them in this their period of bereavement. "Vivat Post Funera Virtus." (Signed) Thomas E. Satterthwaite, John G. Perry, Reynold Webb Wilcox, Committee.

Dr. Luis P. Walton was among the earliest members of this Association. Born in England fifty-odd years ago, he came to this country with his family at an early age. He was educated here, having been graduated at Columbia College in 1863 and at the College of Physicians and Surgeons in 1870. His death, which was sudden enough to be almost tragic, occurred in London early in September of this year. He was one of the few representatives of the old school of general medical practitioners, and in that capacity he occupied a position of peculiar confidence and affection in the hearts of a large number of patients. They sought his advice in many other matters besides those appertaining to their physical ills, and they always found in him a patient and sympathetic listener and a sound and earnest adviser. Few who have not been general practitioners themselves can realize the extent of the responsibility and of the unremitting toil involved in caring for a clientele as large as his. He was a genial, kindly gentleman of wide sympathies and general interests, with a vigorous, active, masculine intellect; always cheerful, courageous, sympathetic, and ardently devoted to his friends. For public professional honors and appointments he cared but little, but he was ever loyal to the profession of medicine and generous in his dealings with its members. The suddenness of his death was very shocking to his family and friends, who were wholly unprepared for it; but it was exactly the kind of ending which he would have chosen for himself. Although well aware that such an end was not unlikely from the persistence of certain symptoms whose gravity he did not underestimate, he was uncomplaining, patient, heroic, with a depth and earnestness of character well known and recognized by his intimates; possessed of a shrewd and droll humor and a remarkably alert intelligence. His affectionate devotion to the land of his birth, which amounted almost to a passion, never made him unfair to the land of his adoption, and always inspired respect among those who knew him best. George L. Peabody, Henry S. Norris, Committee.

Dr. Emil Rosenberg, who died Wednesday at his home, 138 West Eighty-fifth street, was known through this and other countries as an authority in the medical examinations of applicants for insurance policies. He was seventy-four years old and came to this country from Germany in 1868, since which time he had been the senior medical examiner of the Northwestern Mutual Life Insurance Company. He was a prominent member of the German Medical Society and other scientific bodies.

William B. O'Rourke, Superintendent of the Metropolitan Hospital on Blackwell's Island, died at the hospital last week from cancer of the stomach. He was born in this city fifty-five years ago. When he was thirteen years old he entered the Harlem Railroad machine shops as an apprentice, working under Richard Croker, who was foreman. Later he became chief machinist in the shops and after that was appointed inspector of boilers in the United States Steamboat Service. In 1890 Mr. O'Rourke was appointed steward of the Homeopathic Hospital on Ward's Island. The next year he became warden of Bellevue Hospital, which position he retained until 1896. In 1898 he was again appointed Warden of that institution.

PHILADELPHIA.

College of Physicians.—The College of Physicians of Philadelphia, at the recent meeting, authorized the president, Dr. Horatio C. Wood, to appoint a committee of eight, including himself, to arrange for the preparation of plans for the new building the college proposes to erect on the new lot purchased last spring. The college has a nucleus of $24,000 for its building fund.

Cures by Lorenz Method.—It is stated that Dr. James K. Young is confident that three-fourths of the operations by Philadelphia surgeons, by the Lorenz method, for congenital dislocation of the hip will prove effective. The cases operated on here, by Lorenz and local surgeons, exceed 50 in number, and Dr. Young believes that more than 40 of the reductions have been successfully accomplished. Patients here seem to respond more readily to treatment than do those in Austria. These views are of course based on the progress of the cases thus far in their treatment.

Vaccination Urged.—The authorities of the Health Department are unceasingly urging upon the people of the city the necessity of vaccination. The outbreak of smallpox which has lasted for several weeks shows no signs of abatement. During the forty-eight hours previous to the time of writing this letter, 13 new cases were reported. Numbers of the public school buildings are being closed temporarily for disinfection. A representative of the Bureau of Health has lately visited the various medical schools of the city in order to vaccinate any students desiring such protection. This was entirely optional on the part of the students.

Streets to be Cleared of Beggars.—Orders have been issued to the police of the city to enforce the laws relative to clearing the streets of beggars, tramps, fakirs and station-house lodgers. This move followed a conference between a committee from the Philadelphia Society for Organizing Charity and the Director of Public Safety. It is believed that if the laws are enforced the begging population will fall into three classes: (1) Many will disappear; (2) some will find their way to the places provided by the city for those who have no home nor means of support; (3) exceptional cases for which charity can and should provide will be looked after by the Society. To dispense with police-station lodgers, the Society will furnish policemen with tickets admitting homeless men and women to their two lodging houses where a bath, bed and two meals will be furnished for three hours' work.

National Association for the Study of Epilepsy.—The annual meeting of this society was held at the College of Physicians, Thursday, November 5. The address of the President, Dr. Wharton Sinkler, dwelt upon the necessity for organized and concentrated effort against epilepsy and stated the purposes of the Association. Among the most important of the number of papers that were read were those of Dr. J. Chalmers DaCosta and Dr. John C. Munro regarding the operative treatment of epilepsy. Both

speakers asserted that operations for the attempted relief of epilepsy are entirely too numerous. Dr. William N. Bullard, of Boston, was unanimously elected President for the ensuing year. The other officers were reelected.

Hebrews Plan New Hospital.—A movement originated some time ago among the Jewish residents in the southern part of the city for the erection of a new hospital has recently taken definite shape. The Mt. Sinai Hospital Association has purchased on the east side of Fifth street, between Reed and Dickinson streets, a lot 88 by 241 feet in size. On this it is proposed to erect a modern hospital to cost at least $100,000. One of the principal reasons for establishing the hospital is the distance from that locality of the Jewish Hospital in the northern portion of the city.

Compulsory Vaccination in Allegheny.—As one of the sequels of the recent investigations in Allegheny City the Board of Health has instituted compulsory vaccination in that city. Dr. Benjamin Lee, Secretary of the State Board of Health, says it is the first occasion in recent years in which compulsory vaccination has been enforced in a large city in Pennsylvania. The records show that last month there were in Allegheny 87 cases of smallpox and 22 deaths, hence the direction of the State Board is absolutely compulsory.

Home Study.—Superintendent of Schools Brooks has sent a circular to the principals of the elementary schools calling attention to the amount of home study to be assigned to the different grades. The rules are as follows: First. In the first and second grades, no home study is to be assigned. Second. In the third grade not more than half an hour, and in the fourth grade not more than three-quarters of an hour of home work is required. Third. In the fifth grade, not more than one hour; in the sixth grade, not more than one and a quarter hours; in the seventh grade, not more than one and a half hours, and in the eighth grade, not more than from an hour and a half to two hours of home work is required. These are maximum limits of time not to be transcended for any reason whatever. If any teacher assigns home work requiring more time than specified above, she is not complying with the direction of the Superintendent, based upon the action of the Board of Education.

Obituary.—Dr. Franklin Van Artsdalen, a well-known physician of this city and Lower Merion Township, died at his home November 5, aged sixty-nine years. He graduated from Jefferson Medical College in 1856. The deceased was prominently identified with many secret societies, particularly the Masons and Odd Fellows.

CHICAGO.

Chicago Surgical Society.—At the annual meeting of this Society, held Oct. 19, 1903, the following officers were elected for the ensuing year: President, Dr. E. Wyllys Andrews; Vice-President, Dr. Malcolm L. Harris; Secretary, Dr. A. E. Halstead; Treasurer, Dr. Daniel N. Eisendrath.

Oak Leigh Educational Sanitarium.—A new sanitarium has been opened at Lake Geneva for the treatment of children suffering from nervous and mental affections. The institution, which is now under the private supervision of Dr. Mary E. Pogue, former resident physician of the Illinois Hospital for Feeble-minded Children, will be known as the Oak Leigh Educational Sanitarium, and the object will be to meet the present needs for the treatment of the mentally deficient children. The aim of the sanitarium will be to correct the causes of deficiency, if possible; to house the unfortunate children in attractive hygienic surroundings; to educate them in the line of work to which each child responds most readily, and to prepare them for living rather than to incarcerate them for life. Supporting Dr. Pogue, as a supervisory board, are Drs. Daniel R. Brower, Sanger Brown, Archibald Church, W. S. Christopher, Homer E. Halbert, and Wm. G. Stearns. The sanitarium is the offspring of an idea of friends of the Children's Hospital at Lake Geneva to establish and affiliate it with some such institution, but a lack of funds made this impossible. Kindergarten, medical and corrective gymnastics, the correcting of speech defects, articulation, counting of beads, and the less exhaustive methods of mathematics, modeling in clay, basket and mat weaving, and the control and understanding of self are to be taught, each child receiving individual instruction. This is a most commendable enterprise and much needed, because physicians in Chicago are being constantly called upon to recommend institutions for the treatment of mentally defective children.

Case of Blastomycosis.—At a meeting of the Chicago Medical Society, held Nov. 4, 1903, Dr. E. A. Fischkin reported and showed a case of blastomycosis. The patient was an Italian, fifty-one years of age, whose family history was negative. His wife and children were healthy. Patient had had a keratosis on the side of his nose for fifteen years without undergoing any change. The present disease began in May of this year. A pimple appeared near the external corner of the eye; he scratched it with his finger, shortly after which it became sore and began to enlarge. A similar lesion appeared on the back of the neck. When patient first presented himself, the lesion around the eye covered an area of about three-quarters of an inch in width and one inch in length, extending from the lower eye-lid and encircling the external canthus and reaching the upper lid. A photograph of this stage of the disease showed the extent of the lesion. Under potassium iodide and X-ray treatment the patient has shown marked improvement. Patient is still under treatment.

The Mechanical Methods in the Cystoscopic Treatment of Kidney and Ureteral Diseases.—Dr. Gustav Kolischer read a paper with this title before the Chicago Medical Society, saying that the direct local treatment of ureteral and kidney diseases, by the aid of the cystoscope and the ureteral catheter, is not as popular among the surgeons as should be expected. Possibilities of this method may be summed up as follows: Cases of pyelitis, especially those of gonorrheal origin, will heal under repeated flushings of the kidney pelvis through the ureteral catheter. Impacted ureteral gravel can occasionally be loosened by the ureteral sound. The same holds good of ureteral stones. The author's method of running a catheter up to the impacted stone and then injecting vaseline oil, has often been successfully employed by the essayist and others. This method in releasing the impaction meets a vital emergency in removing the cause of reflectoric, bilateral anuria without exposing the patient to so dangerous an operation as ureterotomy. Ureteral catheterization and flushing may be used in order to remove pus plugs. Certain cases of ureteritis can be cured by injecting antiseptic solutions into the diseased part of the ureter. The results in ureteral strictures are still far from satisfactory on account of technical

shortcomings. Occasionally, a laterally located ureteral fistula can be cured by a permanent ureteral catheter. The question arises: Is the favorable influence of this method on certain cases due to any specific action of the fluid used, or simply due to mechanical influences? The author is inclined to favor the latter explanation, for the reason that pyelitis cases will rapidly improve, especially so far as the general condition of the patient is concerned, although only indifferent fluids were used for the flushing. Patients, carriers of ureteral stones, improve rapidly and stay in this improved condition for a long time, although the repeated flushing of the ureter with the indifferent fluids didn't dislodge the stone or the calculi at all. The author tries to explain these facts by the following theory: In an inflamed renal pelvis, or around an impacted ureteral calculus, pus and débris will be precipitated and accumulated. Decomposition in these masses will lead to the formation of toxines and subsequent absorption of those into the system. Therefore, the appearance of certain symptoms which will disappear after repeated flushing has removed these infectious deposits. Decomposition, absorption and the reappearance of the symptoms will recur if newly formed deposits are again precipitated. Although the author expects improvements and more numerous and more satisfactory results from these methods, he wants to caution against any overflow of enthusiasm and against reports which are more enthusiastic than are apt to stand for a rigorous criticism.

The Limitations of the Practical Value of Urethroscopy.—Dr. Louis E. Schmidt said that the achievements of urethroscopy has been gained from two directions. The cognizance of certain facts has been obtained by comparing and studying the findings of the superficial appearance of the urethra during operations and autopsies. Their pathological changes were made to coincide with these, so that deep seated as well as only superficial changes, are to be correctly diagnosed by determining the correct urethroscopic image. Experience has positively shown that urethroscopic examinations not only have often been useless, but that frequently repeated urethroscopic manipulations have been distinctly harmful to the general condition of patients. The urethroscopic tube of appropriate size should admit of easy introduction. If small (in diameter) tubes are used, the sought-for information is not easily gained, while if a sufficiently large tube is employed and forced through very dense infiltrations, distinct reaction will follow, probably due to the carrying of infection to the deeper layers. There is an actual demand for urethroscopy during the course of a large number of cases of chronic gonorrhea. Those cases that cause one to believe that one of certain localized processes are present and which do not yield to routine treatment. The localized processes may be infiltrated ulcerations with a depressed center, hard granulations, coated fissures, encircling rigid infiltrations, involvement about and within the urethral glands or other processes which tend to occur in patches.

Superficial Ulcerations.—Here the long and light gonorrheal threads are not found, but irregularly shaped flakes, usually thicker in the center and even dark in color, microscopically shown to be blood, will be found to float in the urine. The involved areas can only be correctly located with the urethroscope. The presence of coated fissures may be strongly suspected if patients observe, after a nocturnal pollution or after the sexual act and frequently after each urinary act, a distinct shock always in the same place and continuing for some time. Here again the urethroscope can be of service. Stubborn granulations are to be suspected whenever regular sounding produces more or less profuse hemorrhage each time. As a rule these granulations will not yield except to heroic treatment through the urethroscope. Infiltrations of greater extent and rigidity manifest themselves by the appearance of a more catarrhal secretion. It is important to locate these infiltrations and to diagnose their character, because different infiltrations call for an entirely different mode of treatment. The diagnosis and indications are made with the urethroscope. Another group of symptoms, those of a sexual character, forcibly suggest the use of the urethroscope.

American Electro-Medical Society.—The first annual meeting of this Society will be held December 1, 2, and 3, at the Masonic Temple, Chicago. This society, which already numbers over one hundred and fifty members, has for its object "Investigation in Electricity and Allied Sciences, and the Encouragement of their Application to Medicine and Surgery by the Formation of District and Local Societies." Papers will be presented by Dr. John B. Murphy, Chicago; Dr. Byron Robinson, Chicago; Dr. G. Betton Massey, Philadelphia; Dr. C. S. Neiswanger, Chicago; Hon. John M. Smulski, city attorney for Chicago; Dr. J. Rudis-Jincinsky, Cedar Rapids, Iowa; Dr. H. Preston Pratt, Chicago; Hon. Edward B. Elliott, city electrician for Chicago; Dr. Clarence Skinner, New Haven, Conn.; Dr. J. N. Scott, Kansas City, Mo.; Dr. R. S. Gregg, Chicago; Dr. Mirhan Kassabian, Philadelphia; Dr. T. Proctor Hall, Chicago; Dr. A .D. Rockwell, New York; Dr. Carl S. Beck, New York; Dr. Heber Robarts, St. Louis, Mo.; Dr. John E. Gilman, Chicago; Dr. Chas. G. Davis, Chicago; Dr. O. P. Clemensen, Chicago; Dr. J. P. Hetherington, Logansport, Ind.; Dr. C. W. McMichael, Chicago; Dr. O. S. Barnum, Los Angeles, Cal.; Dr. Elmore S. Pettyjohn, Chicago; Dr. Geo. F. Hawley, Chicago; Dr. John E. Harper, Chicago; Dr. Lloyd Hammond, Chicago; Dr. F. A. Leusman, Chicago; Dr. C. D. Collins, Chicago; Dr. Hamilton Forline, Chicago; Dr. R. H. Bartlett, Chicago; Dr. H. P. Fitzpatrick, Chicago.

CANADA.

Want Tuberculosis Dispensary Established in Montreal.—At a recent well-attended meeting of the Investigation Committee of the Montreal League for the Prevention of Tuberculosis, a resolution was unanimously passed favoring the establishment of a dispensary in that city for cases of tuberculosis.

Public Health and Railway Cars.—Assurances have been given by the superintendent of dining, parlor and sleeping cars of the C. P. R.R. in Canada, that everything in connection with their service is kept in a satisfactory clean condition. After a run across the continent all these coaches are cleaned by the compressed air system, and every ten days all these cars are thoroughly disinfected, and fumigated by means of formaldehyde. If any contagious disease is known to have been carried by any particular car that car is immediately put out of commission, and not used again until it has been satisfactorily disinfected. When a supposed consumptive has occupied any of these coaches the linen and blankets utilized are subjected to a separate washing, with an absolutely irreproachable disinfection.

Action Taken Against Physicians.—The Pharmaceutical Association of the province of Quebec has

laid charges in the Police Court of the city of Quebec against a number of the physicians of that city who have been in the habit of giving their prescriptions to unlicensed druggists or to unregistered drug clerks. Actions have also been entered against several druggists accused of selling poisons to the public contrary to the provisions of the Pharmacy Act.

Changes in the Quebec Medical Act.—The College of Physicians and Surgeons of the Province of Quebec have decided to recommend at the next meeting of the legislature of that province that their Medical Act shall be amended to provide for a five years' course of medicine instead of four as at present prevails. They will also advise that the clause providing for the registering of those holding English degrees without further examination in Quebec shall be rescinded. In addition to this it will be recommended that the requirements for matriculation for French students shall be a B.A. degree, and for the English as at present holds.

Manitoba Medical College.—The Manitoba Medical College began its present session with the largest freshman class in its history. This numbers something over forty, and it is the twenty-first session of the College. The most prominent feature of the Medical Act of the province of Manitoba is that those receiving degrees from their provincial university shall not be required to pass an examination before the Medical Council of the province. All they have to do is simply to register, present their diploma and pay the necessary fee of $75. For the present session the following changes have been made on the staff: Dr. J. O. Todd has been appointed Professor of Anatomy in succession to the late Dr. Neilson; Dr. James McKenty and Dr. James Pullar have been appointed assistant demonstrators of anatomy. Dr. W. L. Watt will conduct the practical and physiological chemistry.

GENERAL.

Prof. von Mikulicz on America—In lecturing recently at Breslau, Professor von Mikulicz spoke of his recent trip to the United States. He praised American surgeons and said he found more fruitful ideas among them than among the French or English. Part of the allusion was as follows: "The time is past when we were the givers and the Americans the receivers. The American character has as a fundamental feature unlimited self-confidence. The American believes he can do anything that is wanted, and he wishes to see America regarded as the most beautiful and most preeminent land in the world. Nevertheless, we have no ground for fear, for, in the sharp economic contest, the Germans have some advantages over the Americans. The latter recognize the efficiency of the Germans, calling them the 'Yankees of Europe.'"

Drunkenness Among English Women.—In the last report of the London County Council, regarding drunkenness in London, it is stated that of 90 persons taken into custody for habitual drunkenness 89 were women. Whatever these remarkable statistics may indicate, it is certain that they do not represent the proportion of habitual drunkenness in the two sexes. While moral degradation of any sort is more complete and hopeless in women than in men, it is a matter of common observation that the latter furnish the majority of cases of alcoholic and drug excess.

Alcohol is Depopulating Normandy.—The population of the five departments of Normandy is 150,000 less than it was thirty years ago, and the decrease is attributed wholly to the excessive use of alcohol. M. Debove, the dean of the Paris Faculty of Medicine, shows how alcohol operates in two directions toward the diminution of the population—by raising the average of mortality and by weakening the vitality of the majority that survive. There are places in Normandy where the consumption of brandy is more than a quart per day per head of the adult population. Alcoholism is said to have got a firm hold on a large part of the female population. In the "fairly temperate" canton of Tourove the average weekly consumption of raw spirits is a little over three and a half quarts for each male adult and about two quarts for grown up women and young children.

Liverpool Institute of Comparative Pathology—The London *Times*, according to *Science*, states that in connection with the Liverpool Institute of Comparative Pathology (Liverpool University), of which Professors Boyce and Sherrington are directors, a tropical veterinary department has been established. Its objects are to train veterinary and medical men in the tropical diseases of animals, to afford facilities for research in such diseases and organize expeditions, and to organize preventive measures in the tropics against diseases of animals. A memorandum on the subject has just been issued by the institute. It is pointed out that the advantages which Liverpool possesses for the study of tropical medicine are equally applicable to tropical veterinary medicine, there being an immense foreign cattle trade with the port. The Johnston Laboratory of Liverpool University, opened last May by Mr. Walter Long, M.P., contains the fully equipped laboratories of the Institute of Comparative Pathology, of the Tropical School of Bio-Chemistry and of the Cancer Research Committee, and is directly connected with the departments of bacteriology, pathology and physiology. These subjects, closely associated in the new Thompson Yates and Johnston Laboratories, it is pointed out, mutually help one another, and thus increase the thoroughness of training and greatly promote the opportunities for research. The secretary of state for war has approved of the course laid down by the institute, and in future officers of the Army Veterinary Department will be sent to Liverpool for their special training, the Army Department paying the fees. The Liverpool School of Tropical Medicine also trains officers sent specially by the government. In connection with the new department it is desired to establish a practical post-graduate class in veterinary medicine, and also a school of veterinary medicine. Firms interested in the cattle trade have subscribed a considerable sum toward the expenses involved, but further funds are needed.

Another Century Old "New Discovery."—From *Science* we clip the following: "A hitherto undescribed visual phenomenon.—To the Editor of *Science:* The phenomenon of apparent movement described by Dr. Geo. M. Gould, of Philadelphia (*Science*, XVIII, 536), was discussed in 1896 by Professor S. Exner in an article entitled 'Ueber autokinetische Empfindungen' (*Zeits. f. Psych. u. Physiol. d. Sinnesorgane*, XII, 313). According to Exner, the first observation on record was made by Alexander von Humboldt in 1799. Several authors (among them men as well known as Aubert and Charpentier) have occupied themselves with the phenomenon, and it forms the subject of an experiment in Sandford's *Laboratory Course*, 1898, 109.—E. B. Titchener."

New Jersey State Medical Regulations.—Dr. John V. Shoemaker comes out in an editorial in the November number of his *Medical Bulletin* denouncing the New Jersey State Board of Medical Examiners for "the erection of a Chinese wall of exclusiveness which shall shut out practitioners from other States from practising

within its borders." It purports to give a truthful statement of facts sustaining this charge, but in reality distorts the facts and misrepresents the medical legislation and policy of New Jersey. The article is the subject of considerable comment and as it unfairly represents the situation in that State Dr. E. L. B. Godfrey, Secretary of the State Board of Medical Examiners of New Jersey, gives the following reply: "The author of the article on 'Reactionary Measures in New Jersey,' published in the *Medical Bulletin*, of Philadelphia, edited by Dr. Shoemaker, of the Medico-Chirurgical College, is not familiar with the medical statute nor with the rules and regulations governing the licensing of physicians by the State of New Jersey. No legally qualified physician of another State is debarred from visiting patients in this State, provided he does not open an office or put up a sign. No graduated physician is debarred from taking the State examination for medical license, provided he can meet the requirements of the State. No physician is debarred by the State of New Jersey from obtaining an indorsement of a certificate of license issued to him, after examination, by another State, provided the standard of academic, medical and examining requirements of that State is substantially the same as that of New Jersey; and provided further that the candidate for license complies with the same conditions as are required from candidates examined by this State. The academic requirements for a State medical license are based upon a diploma issued after four years of study in a high school of this State. A diploma from a chartered school of equal grade, or a certificate of examination for admission to the freshman class of a literary college, will be accepted as equivalent. Candidates not possessing such diplomas may present evidence of their academic education to the State Superintendent of Public Instruction at Trenton, who is authorized by the State to determine the equivalent of the high school course and to issue certificates which admit to the State examination or indorsement. Full credit is given for any literary, scientific or commercial branches candidates may have studied. Failing to possess the required credentials, candidates may be examined by the State of County Boards of Examiners for Teachers. The Medical requirements are four courses of lectures of at least seven months each, in four different calendar years, prior to graduation from a legally incorporated college. The subjects of examination are the same as they have been since 1894 and consist of fourteen branches of medicine and surgery.

"New Jersey does not prevent any physician from locating to practice medicine in this State who can meet the educational and moral requirements of the State. New Jersey has been one of the most progressive States in the matter of indorsement and has, at this time, reciprocal relations with probably as many States as any State in the Union. The author of the article referred to appears to be a Pennsylvania physician and in his complaint that New Jersey will not indorse a Pennsylvania license forgot to state that Pennsylvania does not indorse the New Jersey license. He demands as a right from New Jersey a courtesy which Pennsylvania does not grant in return. Pennsylvania denied this courtesy to New Jersey when the standards of the two States were equal. Now that our educational standards have been raised to a par with those of New York, the Pennsylvania standards remaining the same, that State cannot reasonably expect indorsement, neither has New Jersey the legal right to grant it. The medical statute of New Jersey is surpassed by none in this country. It is based upon extensive study of the subject, as presented by the States of Massachussets, New York, Ohio, Indiana, Illinois and other States, and was framed by those who have had long experience in State medical examinations. It has the approval of the Medical Society of New Jersey and of the Homeopathic State Medical Society and has been sustained by the Court of Errors and Appeals. Similar statutes govern the practice of law, dentistry and pharmacy. The statute instituting State medical examination was enacted in 1890. It has done more to build up the educational standards of the medical profession of New Jersey than any enactment since the incorporation of the State Medical Society in 1790. At the present time, the proportion of physicians in New Jersey is about 1 to 600 of the population. The demand of the people in these progressive times is not for more physicans but for better educated ones."

Obituary.—Dr. S. S. Lathrop, of Norwich, Conn., thirty-nine years old, was instantly killed Nov. 8, as the result of a collision with an automobile.

CORRESPONDENCE.

MINING AS A SPECULATION.

To the Editor of the MEDICAL NEWS.

Sir: I cannot refrain from expressing my appreciation of your special article on "Speculative Investments for Physicians," in the current issue of the NEWS. As a physician who has lived in Colorado for nearly 10 years I have no hesitation in saying that it is almost impossible for one here in the center of the mining industry to get back his principal if he invests in any form of mining. Appreciative patients often give their physicians absolutely disinterested advice, yet, in spite of this investments almost invariably result in loss. Fortunes are made in mining in States like Colorado, but they are made by the men whose training fits them for practical mining work. Where one physician wins, hundreds are sure to lose, and the first advice which we are apt to give to brother practitioners who come from other States is to scrupulously avoid speculative investments. We can no more play the promoter's game successfully than he can come into our offices and conduct our work. The best a physician can do with his savings, be they small or large, is to put them in a good savings-bank or a good first mortgage bond and be content with a low rate of interest.

While talking about investments, those of us who live in the West might refer to such concerns as the United States Steel Corporation, but that is "another story." PHYSICIAN.

Denver, Colo., Nov. 6, 1903.

SOCIETY PROCEEDINGS.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, June 4, 1903.

The President, Dr. John M. Fisher, in the Chair.

Placenta Previa and Its Treatment with Especial Reference to Combined Version.—This paper was read by Dr. Daniel Longaker, who said that the report included 17 cases, all of which were seen by the reporter and all but two treated by him. There was but one maternal death, the last he had treated. In this case as well as in the others, combined version was elected. The placenta was completely over the os; labor at term; moderate bleeding; child presenting tranversely. The patient was a multipara, and since reading the paper it was learned that she had committed an abortion on herself about a year earlier. The infant was born by the woman's unaided efforts, after version, in forty-five minutes. There was no bleeding

and none until the manual removal of the placenta, which was markedly adherent. After this moderate oozing continued in spite of an intra-uterine gauze pack; death occurring in three hours. Combined version yielded the most brilliant results in the earlier cases, from the earliest period of fetal viability to the thirty-sixth week and it acted as a most certain means of controlling hemorrhage and of exciting labor pains. It was a certain means of inducing labor. The operation is easy; and the small baby stands compression better than the large one. At least in six of the 11 cases was the baby born alive, and only 8 of the entire 18 were saved. (There was a case of twins.) In every one of the cases of combined turning at or near term the baby was lost. The operation of internal version afforded no better results and was mentioned only to be condemned. One case, a short head first labor, with dead baby, illustrated the inherent dangers of the situation for the child. The method of combined version is believed to be free from danger if the rules laid down by all authorities from the time of Hicks be followed. The most important are to introduce one or two fingers; turn, and wait. The waiting does not mean added risk to the child in the author's opinion and experience. It would be more rational to pay as little attention to the fetus in placenta previa as in ectopic pregnancy; then the warning hemorrhage would be the signal for active aggressive interference, and many cases would be safely disposed of in the later months by combined version. Some of those reaching term would be disposed of by the same plan; others by gradual mechanical dilatation, rupture of membranes, and forceps. All, however, would be actively treated in realization of the fact that the woman's safety lies in evacuation of the uterus. The danger from hemorrhage would be greatly lessened; but there still would remain the remoter ones of septicemia, an embolism and rupture of the uterus, to all of which complications the peculiar conditions predispose. There would remain a small maternal mortality. Of the 17 cases reported, in 10 the placenta was centrally implanted, in 6 marginal, and in one not given. Combined version was employed in 12 instances, internal version in three and in two cases the membranes were ruptured and forceps applied. There was only one maternal death and 10 fetal.

Dr. E. E. Montgomery, said in the discussion, that he was greatly interested in the papers read, and that although these cases covered a period of a number of years, some of them having been delivered before the methods he emphasizes were particularly advocated, it is evident that the management of these cases is excellent. When one comes to look at the side of the mother, the record as made leaves little to be desired. One must, however, keep in mind that in this class of patients the interests of two individuals must be considered. The best record that has been made under this plan of procedure has been pretty close to 55 per cent. mortality for the child. It was his privilege to read a paper before the Philadelphia County Medical Society in 1883 upon the subject, "Is Craniotomy Justifiable for the Living Child?" In this he took the ground that it was not. Following the same line of thought it occurs to him that any plan of treatment which affords a mortality of 55 per cent. for the child, is one which should lead its practitioners to consider earnestly whether there were not other measures that afforded but little increased danger for the mother, and greatly increased opportunities for the child. The plan of procedure he has in view is that of Cæsarean section. He appreciates the fact that it requires a considerable amount of moral courage to urge upon a patient, who is certain for an opportunity for delivery with a mortality of one per cent., the necessity of an abdominal incision with its well-known perils, for the sake of her child. There are many cases, however, in which the birth of the living child is of very great importance to the parents, and in which they are willing to take great chances, and it seemed to him it would be the better part of the obstetrician in every case where the symptoms indicate the presence of a placenta previa to make known the dangers and possibilities that might be afforded for their escape for the child through some operative interference. The hemorrhage in these cases gives an indication of the character of the trouble, and enables the physician to prepare himself to perform the operation under careful aseptic precautions. He is able to choose the time when the operation should be done. There are cases, especially those in which the cervix is rigid, where dilatation is likely to be slow and difficult, that Cæsarean section would afford an increased advantage for the mother. In the performance of the operation it is important that the patient should not have been subjected to careless manipulation or examination previously. The plan of procedure which he had opportunity to practise, in a few instances, during the time he did obstetrical work, is that which affords an excellent opportunity for the life of the mother, the Braxton-Hicks method of version, which has been so well described. It is, however, in those cases in which the placenta covers a good portion of the uterine orifice, a procedure exceedingly dangerous to the child.

Dr. Stricker Coles said: Dr. Longaker's mortality is about 5 per cent. for the mother, and about 50 per cent. for the child. He has in that, of course, some cases of central placenta previa, and that should go to this credit, because that is given as the mortality of the lateral varieties. When one comes to the central placenta previa, Truesdale gives a maternal mortality of about 18.9 per cent., and a fetal mortality of about 70 per cent. He has collected from a large number of cases and has had the best mortality statistics he has been able to see. These figures give an idea of the danger of this condition. Many of these cases come to the obstetrician late, and when hemorrhage has occurred he does not think one can expect to save the child. After a woman has bled until she is almost pulseless and exsanguinated, the chances for a living child are very slight. Two cases have come to him lately in which the child was nearly seven months, and in each case he performed version and used the foot simply as a plug, trying to get the patient to react. In one case delivery occurred in twelve hours; in the other, in six. Both mothers made good recoveries. In such cases one cannot expect to save the child. In cases when the child is not very large, it can often be saved by the method of version, and by taking more time than one would when the child is larger. The cases in which the child is large, the patient having gone nearly to the full term of gestation, he thinks are much more difficult to treat. Version and slow extraction will lose a great many children, but if the children are hurriedly extracted the maternal mortality is increased. With Cæsarean section one has a mortality in the last five years of about 5 per cent. What would be the mortality of Cæsarean section if we could get the cases in the early stage. Control hemorrhage for a short time by packing with iodoform gauze until ready for operation. He thinks there is a field in some of these well-advanced cases of pregnancy with central placenta previa for Cæsarean section, and will expect to see the mortality for mother and child reduced, especially when these cases are placed in a hospital early, or preparation made for prompt treatment at their homes.

Dr. Oliver Hopkinson, Jr., said he thought every case of placenta previa is a law unto itself, and the best results will follow careful study of each case. The advantages of the different operations depend greatly upon the variety of placenta previa. The safest plan, he thinks, is by the old Braxton-Hicks method—dilatation just large enough to admit grasping of the foot. His habit is to grasp the anterior foot, if possible, and after extraction, use it as a tampon, either allowing the labor to end spontaneously or use it as a plug, if there be an excess of hemorrhage. He thinks that method the safest for the mother. He believes the lives of the mother and child in placenta previa are antagonistic, and, in trying to save both, you are likely to lose the mother. If the fetal heart is heard, and the mother is in good condition, he thinks Cæsarean section would be the operation par excellence.

Dr. George M. Boyd said he thought the paper brought out the necessity of carefully studying all cases of ante-partum hemorrhage, and impressed upon the profession the necessity for careful diagnosis in ante-partum hemorrhage, for the early diagnosis will mean often the successful treatment. The treatment in his opinion will depend upon whether one gets the case early or late. If the patient has bled profusely and the pulse is rapid there is nothing to do but podalic version as a method of tamponing the cervix or plugging the uterus and emptying it. In central placenta previa, if the diagnosis is made early, if the child is viable and the patient in good condition, the physician does not do his full duty unless he tells his patient of the danger, the high mortality to the child and gives her the privilege of selecting between the two methods of treatment, podalic version or Cæsarean section. His course has been slow delivery after having accomplished version. He agrees with those who state that rapid delivery means a higher mortality for the mother.

Dr. George Erety Shoemaker said that Dr. Longaker is to be congratulated on the results which he is able to present, considering the class of cases which he has had to deal with and the conditions surrounding them. They were not in maternity hospitals, but were taken as they came, often in poor condition from hemorrhage, under poor surroundings, and his results are excellent. The question as to whether version is the best method of handling placenta previa depends on just that point. Is there any other method known which could take the 18 cases just as they stood at the time they came to Dr. Longaker and yield him a mortality as low as that which he has given? Dr. Shoemaker thinks the answer must be that there is no other method Tamponing and forceps and Cæsarean section certainly would give a larger mortality both for mother and child. As to Cæsarean section, it seems to him that that is a procedure which can only be considered in a very few selected cases seen and diagnosed early, under good circumstances, and where for some extraordinary reason the life of the child is of such importance that it can offset the increased danger to the mother. Cæsarean section even in the hands of the most expert has not yet reached the state where the maternal mortality is as low as in the average delivery by podalic version.

Dr. I. P. Strittmatter said that from his observation in 2,100 obstetrical cases he has seen five of placenta previa, one of complete placenta previa in which the placenta was adherent over the internal os and four cases of partial or marginal placenta previa. The method which he has pursued, and which he thinks he would pursue again under similar circumstances, has been to make an examination as soon as hemorrhage appears. If the os is not sufficiently dilated, it should be dilated enough to see what is the matter. Having determined this, the portion of placenta contiguous to the internal os should be detached, the os packed with iodoform gauze and then the case should be studied. It is hard sometimes to determine the proper course, especially when the surroundings for operations are unfavorable. In one case of placenta previa hemorrhage occurred five weeks before delivery. It was a slight hemorrhage, but it was very easy to make a diagnosis. By packing the cervix with iodoform gauze, allowing it to remain for seventy two hours, washing out and repacking there was no recurrence of the hemorrhage until the time of delivery at 8½ months. The placenta was not perforated. The foot was seized and the delivery accomplished, using the child as a tampon, with a favorable result for both mother and child. In partial placenta previa packing with iodoform gauze and watching the case has yielded good results. In three cases podalic version was performed with recovery to mother and child. In the fifth case the child was delivered with forceps. This case was very interesting, because it was impossible to keep the packing in its proper place by the ordinary methods and it had to be held in position to dilate the os for the use of the forceps. The hemorrhage was slight in the beginning, but it did not recur after sufficient dilatation had taken place to allow the occiput to enter the external os. Personally, he is in favor of podalic version in every instance when there is slow dilatation of the os or inability to control hemorrhage by packing with iodoform gauze. When the hemorrhage can be controlled he thinks it is better to wait for a time, particularly so, if there has been severe hemorrhage. The early diagnosis in placenta previa is everything, and every patient applying for obstetric service, in the presence of any hemorrhage, should be carefully examined and her case carefully studied. If this examination does not yield a decisive result as to the cause of hemorrhage, it should be repeated until a result can be obtained. This offers the best chance of a successful outcome of the case.

Dr. John W. West said that his treatment of placenta previa has been podalic version in every case.

Dr. Richard C. Norris said that no plan of treatment suitable to all cases could be selected. There are three main conditions which would determine the course of action in any given case: The state of the cervix, the degree of hemorrhage, and the variety of the placenta previa. It is well known to those who have had experience with these cases, that where lateral or marginal placenta previa occurs the hemorrhage may be slight; often indeed, not recognized unless the physician studies the attachment of the amnion to the placenta after it has been delivered. The lower uterine segment, thinned, overstretched and edematous, is readily torn and severe lacerations and hemorrhage can follow the speed that one would use ordinarily in extracting. There will be some cases even after version in which the hemorrhage may not be entirely controlled, and here it is well to remember that by slight and steady traction on the foot the hemorrhage can be controlled without injury to the cervix. When one considers the maternal and fetal mortality of placenta previa and determines to try Cæsarean section to improve it, one must remember the unfavorable conditions. The majority of cases are premature births. We have to deal with a premature child and with a child that is more or less exsanguinated. The infant mortality is and always will be great, despite the more rapid delivery. These cases are not ideal cases for surgical interference. He predicts that as time goes on, Cæsarean section will pass away as a means of treatment for placenta previa, and that more and more will we depend upon version and slow extraction, as heretofore outlined. He would lay stress upon the dangers of the third stage of labor in these cases, the hemorrhage fol-

lowing the birth of the child. No one should attend a case of placenta previa without having at hand the appliances to treat this alarming condition. The insertion of a utero-vaginal tampon from the fundus to the vulva, kept in place for twenty-four hours, and gradually removed, is the only treatment. To attempt to stitch any lacerations, is a loss of valuable time. In conclusion, he said that from his experience and knowledge of the experience of obstetricians throughout the world, Hicks has done more to reduce the mortality of placenta previa than has been accomplished by any other treatment, and that placenta previa can never be practically treated by Cæsarean section.

Dr. Charles P. Noble said that his own experience leads him to take that ground most decidedly. While he has not had a large experience, he has had the happy fortune of seeing all the mothers recover. Two cases in which he was consulted, ended fatally because version was not done promptly. The patients bled to death before version was attempted. Aside from these personal results, he thinks the statistics of the treatment of placenta previa in general, bear out the belief that the Braxton-Hicks method of version gives us the best results.

Dr. Longaker, in closing, remarked that the practical difficulties that present themselves to his mind in consideration of Cæsarean section have been so fully answered by Dr. Norris that there remains nothing for him to say. Dr. Hopkinson asks a question about the hand used. Dr. Longaker has never ceased to be thankful to one of his teachers, Dr. Penrose, for the very emphatic way in which he impressed that point upon our minds in his lectures. He would say, "Use that hand which, when held between pronation and supination, the palm corresponds to the child's abdominal surface." It is a very good rule, and he follows it in doing internal version. Version is usually feasible by the combined method. The head is easily displaced. The shoulders come into contact with the intrauterine finger, the other hand depresses the breach, and the knee and foot drop into the intrauterine finger's reach. An assistant or an intelligent nurse can often render useful assistance by making pressure upon the fundus.

Exhibition of Specimens.—Dr. W. Reynolds Wilson exhibited this case. It was one in which the performance of Cæsarean section, followed by hysterectomy, was necessary on account of multiple fibromyoma of the uterus. The indications were perfectly outlined; the obstruction to the passage of the child was absolute, inasmuch as the pelvic cavity was completely filled with a pedunculated tumor. The cervix was pushed forward, and was entirely out the axis of the pelvic canal. It is unusual to find the indications for the operation so clear. In the majority of primiparous women the question of Cæsarean section is based entirely on measurements. This in some instances is indefinite. The woman, a primipara, had reached the beginning of the ninth month of pregnancy. The condition of the kidneys made it necessary to terminate pregnancy at once. There was acute nephritis with blood and granular casts in the urine. The child (weighing 5½ pounds) was rapidly delivered with the uterus *in situ*. Dr. W. Reynolds Wilson found it impossible to deliver the mass from the abdominal cavity before extracting the child, because the pelvic tumor was so great that he could not carry his hand back through the ample incision sufficiently deep to draw out the impacted tumor from the pelvis while the child was still in the uterus. The uterine incision was made at a point on the anterior wall, between the subperitoneal tumors which studded the uterine surface. The amount of hemorrhage was not excessive. The bleeding was constant, but it arose from the delay in reaching the mass in the pelvis, and in getting the tumor completely out of the incision in order that ligation could take place. The adhesions were moderate, so that the operation in this respect was ideal. The mother and child are both in good condition. The uterine tumor weighed seven pounds.

NORTH BRANCH OF THE PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting held Thursday, Sept. 11, 1903.

Dr. H. Brooker Mills, in the Chair.

Funic Pulsations—When to Ligate the Cord.—This paper was read by Dr. William Harmar Good. He said that the question was, Are the funic pulsations fetal or maternal in origin? In answer to this question one case was reported where, in a six months' miscarriage, the cord pulsated five minutes after the whole contents of the uterus—child, placenta and membranes intact had been expelled. In another case a ligature was placed around the cord, the pulsation on the placenta side immediately ceased, while those on the fetal side continued for some time. As the pulsations are fetal in origin in a case with a relaxed uterus and a child forcing a lot of blood into a sponge-like placenta, one should not wait for cessation of pulsation before ligating the cord, but, as Caviglia has pointed out, ligate the cord during the first firm contraction of the uterus when the blood is forced out of the placenta into the child.

Dr. A. Bern Hirsh felt that the pulsation originated from the mother, at least to a very large extent. He did not believe that hemostats or ligatures should be applied to the child immediately after birth, but that the cord should be severed before the application of either. He also felt that resuscitation had been aided in many cases by allowing some bleeding.

Dr. Samuel Wolfe felt that as there was no direct communication between the maternal and the fetal circulation, the pulsation must necessarily emanate from the fetus. In reference to tying the cord, he believed that there should be a fair amount of weakening of the funic circulation before it is tied, and if no contractions occur, did not believe tying was necessary. He did not believe bleeding should be permitted, unless there was some indication, such as asphyxiation, therefor.

Dr. Good, in closing, felt that the fact that the pulsations were fetal and not maternal could be demonstrated by observing whether the pulsations were synchronous with the maternal or the fetal heart, and also by the fact that if a hemostat was placed on the cord, the pulsation would cease on the maternal side, but continue on the fetal. He believed that the cord should be ligated in healthy children at once, but that in weak children it is better to wait.

"Syphilitic Pharyngeal Abscess with Necrosis of the Cervical Vertebræ."—Dr. Nathan G. Ward, of Philadelphia, called attention to the fact that syphilis of the upper respiratory tract might occur during any of the three clinical stages of the disease, and may be merely inflammatory, with or without ulceration, or there may be excessive necrosis, the most distinctive and intractable lesions occurring in the tertiary stages, and postpharyngeal abscesses with necrosis of the cervical vertebræ being rare. He reviewed the work of Allin, who in 58 cases of postpharyngeal abscess, four of which were complicated by cervical necrosis of syphilitic origin, and also the cases reported by Mackenzie and Chapman. He then reported a case which occurred about three weeks after the last confinement which occurred about twelve years ago; the first manifestations

of the disease appearing on the genitalia, followed six weeks later by erythematous, papular and vesicular eruption over the entire body, later disappearing, after which she was free from trouble for some time, when ulcerations appeared on the anterior surfaces of both legs below the knee; one over the left malar bone, and a severe iritis with synechiæ. When first seen by the writer, September 25, 1898, these lesions had all healed but there were three ulcers on the right shoulder and one on the posterior wall of the pharynx about three-quarters of an inch in diameter surrounded by soft pulpy granulations and covered with yellow, foul smelling pus, which continually oozed from the sinus at the bottom of the ulcer. A probe passed down the sinus to the cervical vertebræ showed it to be hard and resistent, with no rough or necrosed areas. She had been unable to lie down for six months, and the pain was so intense that very little sleep was obtained in a Morris chair, which was worse at night and in damp, stormy weather, it being necessary whenever she moved to steady her head with both hands. The ulcer was cleansed daily with peroxide of hydrogen and the granulations touched twice a week with chromic acid. Her history revealing the fact that iodides and mercury had already been given to the point of tolerance, the following was given in teaspoonful doses three times a day:

R Iodixe
Bromine, aa..... gr. ⅙
Phosphorus .....gr. 1/100
Sherry, q.s.....dram 1

In addition, phosphate of sodium and calomel were given to prevent constipation. K. I. was attempted to be administered without the patient's knowledge, but each time she detected its presence and complained of pain and nausea. In about three weeks the ulcer looked healthier and soon after broke down and was as bad as at the beginning. About the middle of November a small piece of bone was seen protruding in the sinus, which could be manipulated slightly, but was not entirely free, and moving it caused much pain. By gently moving it at each visit, in one month it was entirely free and a piece of bone one inch by three-quarters of an inch was removed, which was full of holes. Again the ulcer underwent a course of healing and growing worse and in March of that year another piece of bone was removed one-half inch square, after which the ulcer healed and has remained so during the period of four years following it, and there have been no symptoms.

Dr. Carle Lee Felt stated that he believed a long time was required to completely eradicate the syphilitic poison from the system, and that many of the cases recurred in some form after being pronounced cured, reporting a case which had been discharged as cured followed a month later by syphilitic gumma obstructing the nose. He reported another case in which the patient was suffering from a thickened nasal wall, and although he absolutely denied specific infection, the condition was cured by the use of K. I. In reference to the Wine of Iodide, he stated that he employed it with benefit in a case in which K. I. could not be tolerated.

Dr. Lewis S. Somers felt that syphilis was one of the most complicated diseases involving the walls of the pharynx, the posterior wall being usually affected. He believed that no matter what treatment was used, the disease was liable to reappear for three or four years, and referred to the case of a man where there were local manifestations twenty-five years after the discontinuance of treatment.

Dr. J. Cardeen Cooper felt that Wine of Iodide was especially valuable because it improved the patients' general condition, as the stomach is frequently in a condition where it will not tolerate either food or medicine. He remarked the fact that women usually improve more rapidly than men, which he attributed to the fact that they did not smoke, as the improvement was also more marked in men who were non-smokers. He did not believe that syphilis was an incurable disease, and felt that in those cases which were reported as showing no manifestations for twenty-five years, the symptoms had been present, but were so slight that they had been overlooked.

Dr. Ward, in closing, stated that he had seen two cases of gumma of the posterior wall of the pharynx, and called for the necessity of promptly arresting the progress of the disease in order to prevent the destruction of tissues. He stated that he had received marked good by inhalation of tincture of iodine in the form of a vapor, using the water as hot as it can be borne.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

SECTION ON CLINICAL MEDICINE AND SURGERY.

Stated Meeting, held Friday, October 16, 1903.

Election of Officers.—John B. Blake, M.D., was elected President; Dr. Macgruder, Secretary, and Dr. Ruhrah, junior, member of the Executive Committee for the ensuing year.

Sarcoma of the Nasal Septum. Exhibition of Case and Pathological Specimen.—Dr. R. H. Johnston presented this subject. The patient is a woman aged 70 years. Her mother died at 78 years of an abdominal tumor which was diagnosed a cyst and had originated two years previously. One sister died from a growth in the left side of the neck. The patient has lived an active life as a nurse since 1861. Her health has been good since childhood until two years ago, when she had an attack of pneumonia. In December, while nursing, she contracted a "cold in the head." Home remedies were applied without effect and in February a swelling appeared on the left shoulder followed by involvement of the pre-auricular glands. At this time her physician found a nasal obstruction, but the glands were diagnosed as tuberculous. Three weeks ago the patient came to the Presbyterian Hospital of this city. The left side of the nose was swollen, the pre-auricular and cervical glands were enlarged as well as those above the clavicle. The patient complained of complete nasal obstruction and asthmatic attacks, but there was no pain or hemorrhage. Examination showed a deviation of the septum on the right side with complete obstruction of the nasal passage. On the left side there was a pink, hard, non-movable swelling which was attached to the septum, bled easily and closed the nasal passage. Under the microscope the section of the tumor showed that it was largely cellular with little connective tissue and the diagnosis of sarcoma was made. The tumor was inoperable but portions of it were removed in order to increase the patient's breathing space. The opening, however, closed as fast as it was made. The glands are continually growing and are becoming tender. Dyspnea and dysphagia are now present and enlarged glands are palpable in the axilla. Sarcomata of the nose are rare, Kümmel being able to collect only 69 cases in the literature. The inguinal glands in this case are not enlarged, but the patient complains of some abdominal tightness pointing possibly to involvement of the liver. The question was raised whether this case had any connection with Hodgkins' disease. Microscopically the

tumor is a lymphosarcoma, and it is important to know whether the symptoms of nasal obstruction or the glandular enlargement appeared first. Dr. Johnston stated that the patient is certain the nasal obstruction appeared before the glands.

Creeping Eruption.—Dr. Hamburger said that this disease was unrecorded in America until September, 1902. Patient was an imbecile boy of four years. His history could not be obtained. Examination showed a linear eruption about the center of the buttock running vertically and about 1½ mm. wide. It was pale red, raised and surmounted above by vesicles. The lower portion consisted of purplish brown pigmentation surrounded with crusts. The lesion was migrating slowly, the line advancing about 6 cm. in twenty-four hours. A piece of skin just ahead of the growing end was excised; no parasite was found, but the line immediately faded and has since disappeared. Dr. Lee, of London, showed a case of creeping eruption before the clinical society there in a child three years old. The line migrated 4½ inches in twenty-four hours, taking a very irregular course from the leg across the back and abdomen. It was cured by excision. Crocker calls this disease larva migrans. Several cases of creeping eruption have been observed in Russia, where the disease appears most frequently in the autumn months and shows a black point just ahead of the growth which has been proven to be a larva, similar to that of the fly. None but the Russian cases have shown larvæ, although the symptoms of cases observed elsewhere point to a closely allied, if not indentical, etiology. The disease is prone to affect children and involves generally the uncovered portions of the body, but often the buttock. In Russia the peasants seem to be most often affected. The characteristics are those of an advancing red line with a pigmented area left behind. Vesicles are frequent but pustules never occur. The duration varies from a few days to five weeks. In one of Crocker's cases it lasted 2½ years. The serpiginous course and the absence of suppuration show the diagnosis. The treatment is obvious: Excision of the piece of skin just ahead of the advancing lesion. The larvæ of the bot fly are parasitic to mammals, but the parasitism is limited to one species. Myiasis, or infection with the larvæ of flesh flies, is generally divided into two forms, the internal and external. The intestines, nose, eyes, urethra and vagina may be affected by the disease. In external myiasis the bot flies probably play a part and the larvæ of creeping eruptions belong probably to the bot fly group. The symptoms of cutaneous myiasis seem to vary in different geographical regions. The points of interest in Dr. Hamburger's case are (1) the dermatological features; (2) the question of its relation to myiasis; (3) the fact that it is only the second case described in this country. Dr. Lord also had a case of creeping eruption in his clinic in a Bohemian woman, forty-five years old. The disease lasted four to five weeks. No larva could be found, and it was cured by excision.

The Bicêtre Hospital of Paris.—Dr. Emerson discoursed on this subject. The Bicêtre Hospital is an insane asylum and almshouse for men as the Salpetriere is for women. It has a beautiful situation and an interesting history. It was founded in the thirteenth century by the Bishop of Winchester as a settlement on his estate. In 1657 Louis XIV. established an asylum and almshouse for retired soldiers, luetics, children of dissolute parents and other unfortunates and the hospital has since had great historical interest. The first school for imbeciles was established here and Pinel introduced humanitarian treatment at this hospital, and not at the Salpetriere, as is commonly supposed. Broca also had his training there. The hospital has about 3,500 inmates, gathered from the poor, the insane and the idiotic children of Paris. The city spends on it about $400,000 a year. The treatment is good and the poor of Paris desire to be admitted to the hospital. There is a splendid insane department, a fine school for idiotic children under Borneville, and the wealth of material for neurological students is tremendous. Marie has charge of these cases and their number and value may be judged from a few statistics. The first case of ascending peripheral neuritis, now called syringomyelia, was reported from this clinic; so, of the first case of double athetosis, now known to be chronic chorea. Here, too, are the original cases of cerebellar ataxia and syringomyelia of the ataxic type. Marie, while studying hemiplegia from the standpoint of the palatal reflex, collected 50 right-handed cases and 50 left-handed cases and in another investigation gathered together 20 cases of syringomyelia, a disease considered a rarity elsewhere. The abundance of material may be further estimated from the fact that one autopsy is made a day and only the nervous system of the subject is examined. Marie actually finds more cases of combined sclerosis than he can follow. Paris affords a splendid chance for one who knows just what he wants and needs material for study.

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.*

The President, Dr. Samuel J. Meltzer, in the Chair.

The third regular meeting of the Society for Experimental Biology and Medicine was held in the lecture room of the Department of Zoology, in Schermerhorn Hall at Columbia University, on Wednesday evening, October 21.

The following reports† and demonstrations of original investigations were made:

An Experimental Study of Cell Specification in Embryonic Development.—Prof. Edmund B. Wilson presented the results of a study of the development of isolated embryonic cells, in the mollusks *Patella* and *Dentalium*, which demonstrates that from the first cleavage onward an isolated blastomere undergoes essentially the same differentiation as if it had remained in connection with its fellows. These eggs accordingly show a true mosaic-development, and differ widely in this respect from those of echinoderms. It was also shown that the specific character of the cleavage-cells is predetermined, at least in part, by specification of the regions of the unsegmented egg from which the blastomeres arise, as is proved by the development of fragments obtained by cutting the egg in two before development has begun.

The Occasional Presence in the Blood of Untreated Adult Animals of Large Amounts of Substances Agglutinating Many Bacteria, With Demonstrations.—Dr. William H. Park said that the affinities of bacteria for specific agglutinins have, since the researches of Gruber, been made use of to establish relationship between different cultures. The test properly performed is delicate and reliable, but when carried out with insufficient precautions is often misleading. It has been known for some time that the blood of animals before immunization possessed, in moderate amount, substances which agglutinated many bacteria. An agglutination of bacteria must, therefore, take place

*From American Medicine.

†The abstracts here given have been prepared by the authors themselves. The Secretary has made only a few abbreviations and minor changes.

in a high dilution of serum before it can be considered a specific reaction. From results obtained in his own researches Dr. Park considers that even this requirement is insufficient. He found that before any inoculations had been made the blood serum of certain horses agglutinated, even in such great dilutions as 1 in 1,000, both the bacilli having the characteristics of the true dysentery bacilli of Shiga and those having the characteristics of the mannite-fermenting class of Kruse, Flexner, and Duval. This was true to a somewhat less extent of the serum of full-grown goats. It has happened in some instances that after repeated injections with cultures of one of the varieties of the dysentery bacilli, the animal's blood agglutinated the variety of bacilli not used in immunization in as great or even greater dilutions than it did the variety injected.

It was found that a serum drawn from a horse which had been immunized by repeated injections of the dysentery bacillus received from Shiga, agglutinated this bacillus in dilutions of 1 in 500. The same serum, however, agglutinated the mannite-fermenting bacillus in dilutions of 1 in 1,000. The serum from another horse which had received injections of the mannite-fermenting bacillus, agglutinated this bacillus in dilutions of 1 in 1,000, but also agglutinated the Shiga bacillus in dilutions of 1 in 500. Judged by these reactions, these two varieties of bacilli would appear to be much alike in their affinities. Indeed, Shiga and Flexner seem to have come to this mistaken conclusion. Duval and Bassett certainly fell into this error when they announced, in the fall of 1902, that the mannite-fermenting type from the Baltimore diarrhea cases, and the Shiga type, had identical agglutination characteristics.

The blood of young animals was found by Dr. Park to be comparatively free from bacterial agglutinins. A goat six weeks old was found to possess no appreciable bacteria agglutinating substance in its blood. After four injections of a culture of Shiga dysentery bacilli, its blood in dilutions of 1 in 500 agglutinated Shiga bacilli, but only in dilutions of 1 in 10 the mannite-fermenting variety. A rabbit whose blood was negative before immunization, after six injections of this bacillus agglutinated the mannite-fermenting bacillus in dilutions down to 1 in 5,000. The Shiga bacillus was agglutinated only in dilutions of 1 in 20. The slight development of substances which agglutinated the mannite-fermenting type during the process of immunizing to the Shiga bacillus cannot be considered as showing any affinity between the Shiga type, and the fermenting type, since about the same increase was found in animals injected with nutrient bouillon and other substances.

Gastric Secretion Induced by a Reflex From the Intestine.—The main points in Dr. Holmes C. Jackson's results were summarized by him as follows: (1) The introduction of alcohol into the intestine sets up a reflex which causes the secretion of gastric juice. (2) Section of the nerves which supply the stomach (vagi and sympathetic), or the administration of atropine, prevents this reflex, whereas nicotine has no such effect. (3) Of the substances other than alcohol examined in this connection, it was found that oil of peppermint also induces a reflex secretion, but that other irritants, such as mustard and ether, do not show this action. (4) Section of the nerves, or the administration of atropine or nicotine, followed by the introduction of alcohol directly into the stomach, gave results similar to those obtained when the alcohol was injected into the intestine.

The Organism of Smallpox, With Demonstrations.—Dr. Gary N. Calkins, after briefly describing some of the phases in the complicated life history of the smallpox organism, *Cytoryctes variolæ Guarnieri*, demonstrated twelve stages of the organism stained by an adaptation of the Borrel method whereby the organism stains red upon the green background of cell body and nucleus. A similar parasite, as yet undescribed, in the macronucleus of *Paramœcium caudatum* was also shown.

On Respiratory Stimulants, With Demonstration.—Dr. George B. Wallace demonstrated a method for estimating the volume of expired air. A rabbit was used and the volume of air expired under normal conditions, and after the animal had been given a respiratory stimulant, was measured. The apparatus used was a modification of the one devised by Dreser. In the experiments reported by Dr. Wallace, the greatest increase in respiration occurred after administration of atropine, the amount of expired air being increased 75 per cent. Strychnine produced an increase of 35 per cent., caffeine, 9 per cent.; cocaine, 7 per cent.; aspidospermine and quebrachine (two alkaloids obtained from *Quebracho blanco*), 9 per cent., and 17 per cent., respectively.

The Intracellular Reduction of Gold Chloride, With Demonstration.—Dr. A. N. Richards' experiments were on the effects of intravascular injections of the double chloride of gold and sodium, and were carried out under the direction of Professor Schmiedeberg. Microscopic examination of the tissues of rabbits killed by lethal doses of this salt shows the deposition of metallic gold in and immediately about the nuclei of the cells of the kidney, liver, spleen, mucosa of the gastro-intestinal tract, and cardiac muscle. By chemical analysis, it was found that by far the greatest amounts of gold are deposited in the kidney and liver, only traces having been recovered from the other organs.

On account of the ease of reduction of this salt and the possibility of the accurate estimation of the metallic gold, its use is recommended as an indicator of the *quantitative* relationship of the reducing processes in the various organs.

Effect of Ligation Upon the Vital Staining of Nerves, With Demonstration.—The President, Dr. Samuel J. Meltzer, demonstrated pieces of dried sciatic nerves of rabbits which *intra vitam* received intravenous infusions of methylene blue. Single ligatures of the nerve, no matter where applied, are without any influence upon the color of the nerve on either side of the ligature. When the nerve is ligated at two places, the section between the two ligatures remains free of color, while the central and peripheral ends of the nerve turn blue in the usual manner. The effect is the same even if the ligatures are applied near either end of the nerve. This fact shows that, in the vital staining, the methylene blue reaches the nerve only from its central and peripheral ends.

Effects of Blood-letting on Metabolism.—The Secretary, Dr. William J. Gies, reported the results of some experiments recently conducted by him in collaboration with Dr. P. B. Hawk. The experiments were carried out on dogs in a state of nitrogenous equilibrium. The withdrawals of blood were made while the animals were under the influence of ether-chloroform. The metabolic effects of anesthesia and of operation were carefully controlled. We found that hemorrhages of about three per cent. of the body-weight caused among other effects, (1) diminished secretion, and decreased specific gravity of the urine at first, the reverse in twenty-four to forty-eight hours afterward; (2) increased elimination of nitrogen and sulphur, and decreased excretion of phosphorus, in the urine. The amount and consistency of the feces were unaffected. Repeated hemorrhages from the same animal resulted in (*a*) cumulative quantitative metabolic effects in harmony with those indicated above, and were followed by (*b*) steady decline in body weight and (*c*) gradual increase in average daily

volume of urine, even when the animals ate the same amount and kind of food, as at the beginning.

After successive hemorrhages at intervals of a few days the content of nitrogen, sulphur and phosphorus in the blood, as well as specific gravity and number of red corpuscles, gradually diminished, whereas the leucocytes steadily increased in number. Their data confirm the general metabolic results obtained in the earlier experiments by Bauer and others, and disagree with the opposite conclusions, as to effect on proteid catabolism, announced two years ago by Ascoli and Draghi.

BOOK REVIEWS.

SYPHILIS IN DENTISTRY. By L. BLAKE BALDWIN, Chicago, Professor of Dermatology and Venereal Diseases, Post-Graduate Medical School, and EZRA READ LARNED, M.D., Chicago. E. H. Colegrove, Chicago.

THIS little book of but 120 pages furnishes in brief very useful information as to the possibilities of the contraction of syphilis innocently, and contains valuable information not only for dentists, but for medical men. A good historical account forms the introduction and the work is illustrated by a series of colored plates, sure to form an attractive feature for dentists, since they are not likely to be familiar with the appearance of syphilitic lesions. There is a short but valuable appendix on the medicolegal aspects of syphilis that adds another commendable feature to the volume.

YEAR-BOOK OF THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK, June, 1903.

THIS little book in its 200 pages forms an excellent index of the work that is being accomplished by the youngest of our local medical societies here in New York. The officers and executive committee of the society, Medical Association of the Greater City of New York, certainly deserve to feel proud of having found a place for a medical society and then having filled that place so well. The scientific proceedings as given in brief, form an excellent compendium of the year's work and we commend it to other societies as an example of one way to secure a valuable reminder of the subjects that have been discussed.

THE PRACTICAL MEDICINE SERIES OF YEAR BOOKS. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Issued Monthly Under the General Editorial Charge of GUSTAVUS P. HEAD, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Vol. VII. Pediatrics, Edited by ISAAC A. ABT. M.D. Orthopedic Surgery, Edited by JOHN RIDLON, A.M., M.D., June, 1903. The Year Book Publishers, Chicago.

THESE handy little volumes are making a distinct place for themselves. The review of the literature is excellent and well calculated to keep the general practitioner in touch with medical progress. Advances in medicine are often a source of surprise. Aphthous stomatitis, for instance, has always been in the minds of most practitioners a simple form of infectious disease of the mucous membrane. The review of the literature in the present volume shows its relation to foot and mouth disease. The question of typhoid fever in children is excellently reviewed and shows that this chapter is not, as used to be considered, the analogue of that part of natural history which bears the title, "Snakes in Ireland." Of course, Professor Ridlon's review of orthopedic surgical progress is complete and practical.

GYNECOLOGY. A Text-book for Students and a Guide for Practitioners. By WILLIAM R. PRYOR, M.D., Prof. of Gynecology in the New York Polyclinic Medical School; Attending Gynecologist to the Polyclinic Hospital; Consulting Gynecologist to St. Vincent's Hospital, New York City Hospital, St. Elizabeth's Hospital; 163 illustrations in the text. D. Appleton & Co., New York and London.

IN writing this little manual, the author has tried to avoid all the unnecessary portions of the subject which are not essential for a practical working knowledge of the diseases of women. Special endeavor has been made to have this book valuable as a ready reference to those working in private practice, where time is too often lacking for the reading of the larger and more comprehensive volumes devoted to the subject.

Realizing that the average practitioner is called upon to treat many simple gynecological troubles and that he may be "at sea," most excellent and explicit rules for treatment are to be found in the various chapters devoted to the specially common female complaints.

There is no doubt that the book will serve most satisfactorily the purpose for which it was intended.

DISEASES OF THE EYE. By HENRY R. SWANZEY, A.M., M.B., F.R.C.S.I., Surgeon to the Royal Eye and Ear Hospital and Ophthalmic Surgeon to the Adelaide Hospital, Dublin, etc. Eighth revised edition. With 168 illustrations and zephyr card of Holmgren's tests. P. Blakiston's Son & Co., Philadelphia.

THIS well-known book has been thoroughly revised, and with numerous additions, which bring it well up to date, deserves the approval it has hitherto received. A brief mention of some of the newer features shows that the author is in touch with what is best in modern progress: In Chapter IV, a description of conjunctivitis petrificans; in Chapter VI, a description of grating keratitis, guttate keratitis, etc.; in Chapter VIII, a more detailed account of Kuhnts' method of extirpation of the lacrymal sac; in Chapter X, a more detailed account of sympathetic ophthalmitis. The treatment of this important subject is a model of clearness and conciseness.

Chapter XIV contains an unusually clear description of the use of the Roentgen rays for the discovery of foreign bodies, and of the magnet for their removal.

The portions of the book dealing with the relations of the eye to the nervous system are among the most helpful, in concise form, of the many treatises on this subject within reach of the student.

The conservatism of the author and his admirable style are sufficiently familiar. The book is well indexed. The illustrations are not as numerous as has been the custom in recent works on the eye, and are not especially well executed. This book may be warmly recommended as a practical guide for the student, dealing less with the theory and pathology of the subject than with diagnosis and treatment.

SIGHT AND HEARING IN CHILDREN. By ROBERT BRUDENELL CARTER, F.R.C.S., Consulting Ophthalmic Surgeon to St. George's Hospital, and ARTHUR H. CHEATLE, F.R.C.S., Assistant Aural Surgeon to King's College Hospital; Surgeon to the Royal Ear Hospital, etc. pp. VI+120. The Scientific Press, Limited, London.

THE first part of this admirable little book comprising seventy-five pages is devoted to vision, its mechanism, the causes and consequences of its defects, aids to vision, and the cultivation of vision.

It would not be easy to make the complex subject of

optics as well as the physiology of the eye more clear to the laity than is done in the first chapter.

It is, of course, a question whether many teachers and parents will make even this brief excursion into a land unfortunately too little known, but there should be no chance for ignorance, and we know of no book giving information indispensable to those having charge of the education of children so simply, with such charm and absence of pedantry, as does the one under consideration.

Certain points deserve especial consideration. The importance of having the vision of all children examined at the beginning of school life, and at intervals thereafter; this should be done, the author holds, not only as regards acuteness, but also as regards rapidity of perception. The methods employed in the child's instruction, the amount of work exacted from him in a given time, and perhaps his ultimate destination in life, should all be governed by a complete recognition of the nature and degree of his defect.

Although it is the author's intention to put clearly before the public the causes and consequences of defective sight, there are pages which may be read with profit by the specialist, so full are they of conservative common sense. Fortunately, in this country, educators are aware of the importance of testing the sense perceptions of children, and with characteristic zeal the professional part is being done very thoroughly—perhaps too thoroughly the author thinks, in some particulars, at least.

The importance of exercises, preferably competitive, for the cultivation of vision, and the use of charts, such as those suggested by Dr. Joy Jeffries, for the development of color perception (not, of course, with the hope of influencing or altering the defective sense of the congenitally color-blind) is recommended.

In the remaining 40 pages is compressed a very clear and practical description of the ear, nose and its adjacent parts, with suggestions for their care, such as all having to do with children should be made perfectly familiar with. The prevalence of partial deafness among children will no doubt surprise many non-professional readers, and the importance of its prevention should be impressed upon them. The chapters devoted to the care of the ears in childhood, especially as regards the general health and hygienic surroundings, and to the recognition of diseases of the ear and of the nose, are especially to be commended. No suggestions are made as to treatment, for, as the author wisely says—"Household surgery is always risky unless it is guided by the surgeon's hand, and probably is most dangerous in diseases of the eye and ear."

DISEASES OF THE NOSE AND THROAT. By CHARLES HUNTOON KNIGHT, A.M., M.D., Professor of Laryngology, Cornell University Medical College; Surgeon, Manhattan Eye and Ear Hospital, Throat Department, etc. P. Blakiston's Son & Co., Philadelphia.

A WRITER on this specialty must needs bring medicine and surgery unconsciously into a very close relation, for it is but a short step from spraying the nose to the ablation of hypertrophied tissue in rhinitis, or from the removal of adenoids to the opening of the Eustachian tubes by Politzerization. Many authors are indeed tempted by the technical interest of surgery to magnify the importance of operations and to pay too little attention to non-surgical treatment, a scheme which does not suit the general practitioner who is looking for information which he can apply in his practice. Such a fault can hardly be attributed to the present author, for in his own words "The contents (of this book) have formed the basis of a course of lectures at Cornell University Medical College and are arranged chiefly for the convenience of students." As the student is taught so that he may become a good practitioner, we can think of no arrangement that could better satisfy the physician's needs. The order of subjects is Nose, Pharynx, Tonsils and Larynx. A short chapter on the anatomy and physiology of the parts is followed by one on "Methods of Examination," in which attention is directed to the importance of the much-neglected digital examination of the nasopharynx. The subjects of adenoids and hypertrophied tonsils are most fully treated, the author having no words too strong in condemnation of those who advise to leave children with hypertrophied tonsils to outgrow the condition. The illustrations are good and we commend the book as an excellent working text-book on the subject.

FIRST PRINCIPLES OF OTOLOGY. By ALBERT H. BUCK, M.D., Clinical Professor Diseases of the Ear, College of Physicians and Surgeons, Medical Department of Columbia University; Consulting Aural Surgeon New York Eye and Ear Infirmary and Presbyterian Hospital. Second edition. 216 pp. Wm. Wood & Co., New York.

IN this little book the author shows the power so familiar to his many students, of selecting from an immense experience the essentials of his subject. It puts forth in a clear, concise and accurate manner the fundamental principles of otology. The work is not burdened by various theories, confines itself to established facts, and embodies the personal views of its distinguished author. It well represents the advancement of aural surgery of to-day. The purpose for which it was designed, to meet the need of the student and general practitioner as a ready and practical reference, it meets admirably.

DISEASES OF THE EYE. By CHARLES H. MAY, M.D., Chief of Clinic and Instructor in Ophthalmology, College of Phys. and Surg., N. Y., 1890-1903; Ophthalmic Surgeon to the French Hospital, etc. Third edition, revised. With 275 original illustrations, including 16 plates with 36 colored figures. pp. XIII+408. Wm. Wood & Co., New York.

THE popularity of this book is attested by the rapid succession of editions, and it is a well-deserved success. The author has learned by thirteen years of experience in teaching, what the medical student should know, and what, in the multiplicity of his immediately important duties, may be omitted. The descriptions are terse and clear, and no space is wasted with details of theory or discussion of mooted points.

The appearance of the volume and the excellence of the illustrations, an unusual feature in books of this caliber, are worthy of note.

BOOKS RECEIVED.

The MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

LABORATORY GUIDE IN URINARY ANALYSES IN TOXICOLOGY. By R. A. Witthaus. Fifth edition. 115 pages. Illustrated. Wm. Wood & Co., New York.

A TEXT-BOOK OF DISEASES OF WOMEN. By Dr. B. C. Hirst. 8vo. 675 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

A TEXT-BOOK OF OPERATIVE SURGERY. By W. S. Bichman. 8vo, 984 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

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ORIGINAL ARTICLES.

EXPERIMENTS TO DETERMINE THE VALUE OF FORMALIN IN INFECTED WOUNDS OF THE EYE.

BY J. H. CLAIBORNE, M.D.,

AND

EDWARD B. COBURN, M.D.,

OF NEW YORK.

THE object of the experiments herein detailed was to discover the value of formalin in the local treatment of streptococcus infection of the ciliary region and the vitreous chamber in rabbits. They were inspired by the recent publication, by Dr. C. C. Barrows, of a case of general streptococcus infection following labor in which formalin, 1 in 5,000, was used as an intravenous injection. These experiments were conducted in the Physiological Laboratory of the College of Physicians and Surgeons, New York.

By way of ascertaining what effect a comparatively strong solution of formalin would have upon the vitreous body, 10 minims of a 1 in 500 solution were injected into a normal vitreous. Outside of the temporary increase of tension and haziness of the cornea produced by the induced glaucoma, no evil effects whatsoever were observed. The glaucomatous symptoms disappeared in about ten minutes and on the following day no sign of the injection was visible. From this it is obvious that formalin in the above strength has no disintegrating effect upon the vitreous of rabbits.

Infection of Rabbits' Eyes.—Colonies of pure streptococci were placed in water in sufficient quantity to make it perceptibly turbid. This was injected into the vitreous of the rabbits' eyes with a hypodermic needle as follows:

January 30, 1903.—I. White buck. Three minims of the solution of pure streptococci were injected into the vitreous behind the sclerocorneal margin. Ten minutes later no signs of reaction were visible in the eye. II. Spotted buck. Three minims of the above solution were injected into the vitreous. No reaction was noticeable in ten minutes. III. White Buck. Injected as above. No immediate reaction.

Results.—January 31.—I. Circumcorneal injection; iris swollen; lymph stretching across the pupil and exudate at bottom of anterior chamber; fundus hazy; mass of exudate in vitreous humor just under site of injection. II. Slight circumcorneal injection; iris swollen; exudate in pupil; faint reaction of iris to light; fundus hazy with flamiform exudate visible in the anterior part of vitreous humor. III. No reaction visible externally; iris clear and responds to light; fundus clear except in region where injection was made where a mass of greyish white exudate is seen.

It is obvious from the above that the injection of streptococci produced uveitis with exudation into the pupil and vitreous humor in the first and second rabbits. This unquestionably was an infection. The third rabbit showed no iritis or corneal injection but there was a slight exudate in the vitreous. The infection here was milder but it existed.

Beginning of Formalin Injections.—February 2.—I. Iritis better and exudate slightly less. No treatment. II. Status about the same as last noted; exudate general in vitreous chamber. Five minims of formalin solution, 1 in 5,000, injected into Tenon's capsule. III. Status about the same as on January 31. Marked exudate in vitreous. Five minims of formalin, 1 in 5,000, injected into vitreous chamber.

February 4.—I. No iritis and the vitreous opacity appeared less marked. In this animal it will be remembered that no injection of formalin was made. II. Iritis much improved; opacity in vitreous slightly diminished; eye better. In this animal the injection was made in Tenon's capsule. III. The iritis appeared diminished but the vitreous was very cloudy and little or no reflex could be seen. Formalin injection was made into the vitreous in this animal.

It will therefore be seen that the eye which was not treated had improved a great deal. The eye which received the injection of formalin in Tenon's capsule was improved somewhat. But the third eye (which had the injection in the vitreous) had improved as to the iritis but the posterior inflammation was worse. On this date, February 4, the injections were repeated in rabbits I and II but discontinued after that date until February 9.

February 9.—I. Still improving; exudate becoming less but still visible. II. No iritis; exudate in vitreous less and apparently settling to bottom of vitreous chamber. III. Exudate still visible; more marked than in rabbit II. Injections were repeated on this date. The eye of rabbit I, which had not been previously infected, was now infected with streptococci as before described.

February 11.—The newly infected eye of rabbit I was in a bad state; purulent conjunctivitis; iritis; cloudy vitreous and fundus invisible, the originally infected eye was still improving. Formalin injections were repeated in rabbits I and II, the status of which was apparently unchanged.

February 13.—Newly infected eye of rabbit I is destroyed by panophthalmitis. Exudate in the original eye almost entirely gone. Rabbit II, the one in which the injection was intracapsular, was much improved; fundus visible and exudate sinking and being gradually absorbed. III. Eye practically in state of panophthalmitis; 1 in 1,000

formalin solution injected. 1 in 1,000 formalin solution was now used in rabbit II into the capsule as usual and in III into the vitreous.

February 16.—I. Right eye improving; exudate scarcely visible. Left eye, fundus invisible but external signs subsiding. II. Still improving; fundus clearly visible except below. Formalin injection 1 in 1,000 in capsule. III. Iris bombé; fundus invisible and reflex yellowish but external signs again subsiding. Injection of 1 in 1,000 formalin into vitreous.

February 18.—I. Right eye almost clear. Left eye destroyed; posterior synechiæ; yellowish reflex in pupil; tension -2; external inflammatory signs such as conjunctivitis and pericorneal injection gone. II. Fundus still clearing up; intracapsular injection of 1 in 1,000 formalin. III. Hyphema; about same picture of destruction as exhibited in left eye of rabbit I. Injections discontinued.

February 20.—I. Right eye shows clear fundus. Left eye destroyed. II. Improving; fundus almost clear. Formalin injection into capsule 1 in 1,000. III. Destroyed.

It will thus be seen that the right eye of rabbit I infected by five minims of a turbid solution of pure streptococci recovered without any treatment whatsoever in twenty-one days.

The fundus in rabbit II finally became clear. This animal infected in the same way recovered in a trifle longer time after injection into the capsule of 1 in 5,000 formalin, subsequently supplemented by injection of 1 in 1,000 formalin.

The eye of rabbit III was obviously doomed on the seventh day and was hopelessly destroyed in fourteen days. On the fourteenth day the formalin was increased to 1 in 1,000, and rabbit II seemed to recover more rapidly thereafter, but it made no difference in the course of destruction of the eye of rabbit III.

The right eye in each case was originally infected but at no time during the three weeks were there any signs of sympathetic irritation or inflammation.

On February 9, the left eye of rabbit I was infected with the same pure culture and that eye went swiftly to destruction.

It will be seen that the eye with the vitreous injection of formalin ran an uninterrupted course to destruction while the eye with the intracapsular injections recovered. This latter fact would have led to definite hopes of good results from capsular injections had it not been for the more rapid recovery of the eye which had no injections at all.

Second Set of Experiments.—Some of the original colonies of streptococci were now transplanted and the strong vigorous growth obtained was used in a second series of experiments. The new colonies seemed to possess greater virulence than the older ones.

The vitreous of three rabbits was infected as before. In one no treatment at all was employed and in the other two formalin solution 1 in 1,000 was injected into the capsule of Tenon. All three eyes commenced to go the way to destruction in twenty-four hours after infection, although formalin injections of the above strength were used in the capsule at intervals of twenty-four hours in one rabbit and forty-eight hours in the other; all the eyes had become hopelessly lost by panophthalmitis by March 25.

Experiments with Infected Wounds of Ciliary Region.—So far the vitreous chamber alone had been infected and it was then determined to make wounds in the ciliary region with some rough object infected with the streptococcus solution of the second growth.

The eyes of two rabbits were infected by making a penetrating wound just behind the sclerocorneal margin with a rough pointed nail which had been previously dipped into the streptococcus solution.

March 31.—Brown rabbit shows marked infection with chemosis, iritis, (no exudate); 1 in 1,000 formalin solution (10 minims) were injected into the capsule. The yellow rabbit shows very slight reaction with a little redness and bulging over the site of the infection. No formalin treatment.

April 1.—Brown rabbit, panophthalmitis; chemosis; pupil filled with exudate. Yellow rabbit; practically no sign of irritation. Reinfected.

April 2.—Brown rabbit's eye destroyed. Yellow rabbit's eye seriously infected, with exudate in the pupil; chemosis. Injection of 10 minims of 1 in 1,000 formalin into capsule.

April 3.—Yellow rabbit; eye worse; great chemosis and anterior chamber filled with exudate. Eye lost.

Conclusions.—It seems fair to draw the following conclusions from the above detailed experiments:

1. Formalin, 1 in 500, may be injected into the vitreous of rabbits without producing more than momentary disturbance of the eye.

2. It is possible to cause panophthalmitis and consequent destruction of the eyes of rabbits by injecting three minims of a turbid solution of streptococci into the vitreous.

3. It is possible to produce the same result by infection in the ciliary region caused by penetrating wounds with infected pointed instruments.

4. Infections of the vitreous and ciliary region do not necessarily cause destruction of the eye. At times the infected eye recovers spontaneously, the inflammatory symptoms gradually subsiding.

5. Formalin, 1 in 1,000, when injected into the vitreous, exerts no influence on streptococcus infection of the vitreous.

6. The results of these experiments warrant the treatment of commencing infections of the eye by injections into the capsule of Tenon of 1 in 1,000 or even 1 in 500 formalin solution.

Remarks.—In view of the large quantity of infected material injected into the eyes of these rabbits it is possible that the results would have been more favorable had the injections of formalin been made more frequently.

It will be remembered, the statement has been made that in the first experiment the rabbit which had no treatment and the rabbit which had the intracapsular injections recovered completely. This is true but it is proper to state that there remained a very slight opacity apparently in the posterior part of the lens, or on its posterior capsule in each animal. This was probably due to the injury to this structure by the hypodermic needle, for it is quite impossible to perform the above detailed manipulations without struggles. This was the case with all our animals notwithstanding the free use of cocaine. It is also possible that these opacities were deposits of lymph on the posterior surface of the lens such as are frequently observed after certain types of inflammation of the uveal tract. In all other respects these eyes were normal.

"THE HEART CURE;" ITS TERMINOLOGY, PURPOSES AND ACHIEVEMENTS, INCLUDING THE ETIOLOGY OF FATTY DEGENERATION.

BY HOMER WAKEFIELD, M.D.,
OF NEW YORK.

I know of no therapeutic method within the realms of the healing art that has been more misunderstood, and, as a consequence, greater injustice has been done it than that one salvation of the victims of cardiac disease, which has so unfortunately been termed "The Heart Cure." To many superficial observers the name alone condemns it, for a *cure of organic heart lesions* is absurd on the face of it; hence by too many it is associated with the most temporary of palliative measures. Other misled practitioners have fixed ideas that only palliative and temporary sustaining measures are justifiable in the treatment of broken compensation, and actually display not only a lack of sympathy with a systematic treatment, but too often even a spirit of antagonism to the consulting physician, who proposes and superintends the "cure," is manifested.

The term *Nauheim treatment* is not very applicable to the methods, as I now apply them in New York, and even differs somewhat as applied to-day, by the different physicians in Bad Nauheim, Germany. The name "Schott Methods" applies very well to baths and exercises as I have in the past applied them at Bad Nauheim, and would to-day, if there. But, firstly, the artificial bath varies from that at Bad Nauheim, and, secondly, the bath and exercises now constitute but an integral part of the methods I now employ. Thirdly, the association of the Schott name is offensive to those who dispute Prof. Schott's claim, as one of its discoverers. So pending the general acceptance of a better name we must be content with *The Heart Cure,* as it is so universally termed in Europe.

The true aim of the modern "heart cure" is strictly speaking, neither as a palliative measure or a cure of a heart lesion. It undertakes to restore and maintain the heart's compensation, and with it the health of the dependent body. As I expressed it several years ago[12] "The recuperation of an impaired organ or group of organs is possible inversely as existing obstructions impending or arresting their normal activity may be removed." On this law the treatment is largely based.

The sufferer from heart disease, when the consultant is called in, is generally extremely low. The demands of the declining body have caused the attending physician to continually whip up the lagging heart with digitalis, strychnine, etc., until it can maintain compensation no longer and it is found in extreme fatigue dilatation and exhaustion (the cyanosis, cachexia, dyspnea and cough first greets the attention). Metabolism, especially *katabolism,* is almost nil, so depressed is the general oxidation. Anuria is pronounced, edema is quite general, jaundice is often extreme and general manifestations of autotoxication accompany the subnormal temperature, the thready pulse and perhaps a Cheyne-Stokes respiration. The family and near relatives who have gathered about the one who has perhaps for years gradually attained this low condition, have been told by the attending physician of the near approach of death and they have been prepared for the worst. Such is the situation when in ignorance of all this, the consultant is called in to do whatever is possible to prolong life and make it worth living. He has but one thought, the alleviation of suffering, at first, but as conditions improve, he commences measures of systematic and progressive treatment. As the patient continues improvement, the patient and the family begin to think about the unfavorable diagnosis, the attending physician begins to feel embarrassed, and soon he associates his troubles with the incoming of the consultant, from whom he becomes more and more alienated and estranged. These unfortunate diagnoses constitute another detraction from the popularity of the *heart cure.*

A statement by Rosenstein,[9] in 1876, of the expectant course, in *insufficiency of the mitral valve,* very well describes it, as it occurs to-day, up to the point when heart cure methods are begun, and its final termination at the time the statement was written, prior to the reformation in cardiotherapy. "The course of the disease is such that the symptoms of stagnation assume a permanent character, and all the more so in proportion to the greater number present. Though at first it is generally possible to reduce the palpitations and dyspnea by suitable diet and drugs, and temporarily even to remove all edema, yet, after a long period of alternate relatively good health and total incapacity for work, the patient becomes gradually anasarcous and exudations begin to fill up the serous cavities and impede the respiration. Bronchitis, which is always present, increases the cyanosis and whether it be accompanied or not by a pulmonic induration often developed toward the end of the disease the usual termination is edema of the lungs. In a few isolated cases the actual though distant cause of death is embolic obstruc-

tion in the cerebral vessels and its usual results, or extensive apoplexy." The death period of the old plan of treatment is commonly the one selected for calling in the heart specialist of to-day, thus terminating a period of marked decline, and a co-incident failure of the heart to further respond to cardiac tonics and stimulants, and, generally, after a goodly collection of resultant complications from vicious cycles have materialized.

My first effort in such a case is to utilize a stimulant, the effects of which have not been already "worn out," to continue the heart action, and simultaneously I begin to lessen the work of the heart and neutralize and eliminate the acid, colloid and fatty products of fatigue and suboxidation. This first effort is a temporary one, and is calculated simply as a sustaining measure, until the real treatment can be sufficiently developed to relieve the requirements for continuous stimulation. These measures are also augmented by others, reinforcing them, such as massage, warmth to the extremities, etc.

The heart cure *per se*, as I administer it, is entirely based upon a few essential physiological and pathological principles, upon which I am convinced its success entirely depends.

Present time and space at my disposal will not permit an exhaustive exposition of these basic principles, but I will briefly state that a healthy or sound heart muscle can easily, other factors being equal, maintain compensation against almost any heart lesions, embarrassing the cardiac function. My assistants, at my clinic at Bellevue Hospital, will bear me out in the statement that a recent male patient of good muscular development, who on examination at the clinic proved to have murmurs of both the aortic and mitral orifices, was daily engaged at hard labor in the subway, at which he continued after his discharge from my service. Many other laborers with more or less severe heart lesions follow their several laborious avocations, though irregular, from occasional periods of incapacity from broken compensation, from which they quickly recover upon the hospital administered *heart cure*.

Course History of Decompensation.—A heart embarrassed in its function by an orificial stenosis or a valvular deficiency is accordingly crippled, and an individual dependent upon such a heart must be accordingly considered as a person of tantamount shortened limitations, their capacities for physical exertion, endurance, bodily abuse, digestion of food, overcoming obstacles and complicating diseases, are all lessened. Intercurrent complications, as colds, fatigues, worries, anxieties, griefs, indigestions, etc., that would not seriously embarrass the vitality of an organically sound man, will quickly wreck the compensation of one embarrassed by a heart lesion. The lowered arterial pressure is easily impeded to a vital point, by the undue resistance conferred by the unequal distribution of the blood, as caused by chill, thus congesting some parts and depriving others of a sufficiency, by general circulatory stagnation of mental and nervous depression, and the deficiency of oxidation incident to muscular, mental or nervous strain. One of the first indications for relief of cardiac stress and the recuperation of the muscular function is the application of the law recapitulated at the beginning of this article, namely the equalization and entire clearing of the arterial, capillary and venous systems, especial attention being given to the pulmonary, portal and renal circulations, the obstruction of which most commonly and seriously embarrasses the freedom of the circulation.

The above quoted statement of the common course of ordinary cardiac cases, by Rosenstein, very well describes the effects of continually suffering the many pitfalls of a careless or ignorantly spent life, and its certain ultimatum. These the heart cure endeavors to prevent.

As an essential part of my plan of conservation of the patient's energy, which includes, in addition to a very careful dietary which utilizes the digestive powers to best advantage, in the ingestion and digestion of the most nutritious foods; limited to those which can be promptly digested without fermentation or perceptible putrefaction, I always restrict or entirely prohibit sexual intercourse.

PATHOLOGICAL MORPHOSIS.

All tissues are composed of cell units which are continually undergoing destruction and reconstruction (katabolism and anabolism). The circulation of the blood and oxygenation is vital to this metamorphosis (metabolism), in both its aspects. The transmission of the elements of nutrition is so well understood as to be duly recognized by all, but either from ignorance or prejudice, the subject of *katabolism* has been at all times and in all connections grossly neglected, to say the least. Most physicians will readily ejaculate that katabolism is not new to them, but when interrogated on its morphosis they prove to be not only in ignorance but directly question the truth of my allegations. Moreover the text-books are comparatively non-committal upon the details of this subject, and only by much research, can it, even by the collection of widely scattered titbits be verified.

I have by years of study and observation worked out the fact that all tissues which are deprived of a sufficiency of oxygen for that continuous combustion which imperceptibly but adequately consumes the effete eliminations from cells and the detritus of physiological cell disintegration, undergo a changed course from that observed during normal oxidation katabolism, which is characterized by radical changes in both their chemistry and their morphosis. Either by virtue of some form of suboxygenation *per se*, or suboxidation, as due to a deficiency of the necessary supporters of oxidation, namely alkaline environment and active oxidases, the results are the same. The tissues manifest a sluggishness and a reversion toward that rudimentary type of tissue, which is mostly observed in those fundamental forms of protoplasmic life (in the group intervening the monera or amebæ and the medusæ) and which

are more exposed to environmental irritations and other vicissitudes than are the higher forms of life. This tissue change differs from the normal, firstly by an increase in the size and number of cells, as a result of the stasis of katabolic oxidation, and in the presence of a continuous anabolism. The collagen of the cells is first set free during the general protoplasmic gelatinization (which characterizes its structural dissolution), part of which exudes, the balance, together with water, either absorbed from the blood or lymph, or formed during the pathological metamorphosis by hydration, combines with the protoplasm forming the characteristic gelatiniform tissue; the ultimate change of which, according to its environment and conditions of situation, being a fatty or putrefactive one, or a combination of the two. The former being the dryer one and apparently due to a synthesis of carbon and hydrogen, as set free in the incomplete formation of carbondioxide and of water. The latter being one perhaps expressing a greater excess of hydrogen and hence of water formation. However, it should be admitted here that this is mere conjecture unsupported by experiments. The sources of the water are hardly possible to determine in the living subject. Many aromatic and other toxins are, however, formed by this metamorphosis, which are not produced by normal katabolism. It is also of interest in this connection that fatty degenerations are invariably the consequence of suboxidation, whether in living tissue, dead and decayed flesh, or in the ripening of cheese. Obesity in mankind is caused by diminished arterial caliber, carbonic oxide and dioxide poisoning, tissue deprivation, owing to the counter oxidation of higher combustibles, namely ingested alcohol, arsenic, phosphorus (in toxic doses), lead, mercury, etc., which are burned in the liver, thus depriving the liver cells and thereby causing their fatty degeneration, slow asphyxiation, oxidase incapacity of impotent and castrated men and animals, and during undevelopment, maldevelopment, and temporary and permanent exhaustions and obsolescence of the sexual glands, of vices and excesses, and in menstruation, pregnancy, the puerperal period, lactation and after the climacteric, fatty and other suboxidative tissue changes are frequent. In stall fattened animals and Strasbourg geese, owing to their being deprived of a sufficiency of both air, light and exercise, fatty degeneration, general and hepatic, are the rule, especially in the liver in geese. In hibernating animals much fat is accumulated during the winter's sleep, when oxidation is almost nil, and mostly in and about the voluntary muscles where oxidation is the lowest.

The hypercombustion of the general oxygen supply of the body, as observed in hyperexias is responsible for depriving the tissues of sufficient oxygen and thus causes the fatty degeneration so frequently found in cases of prolonged high fever.

In the deficient oxidations of senile degenerations, fatty changes are observed, as well as the general fibrosis, also from subkatabolism. Tissues in an *acid* environment suffer a fatty change as distinguished from an *oxidation*, which is favored by *alkaline* media. The blood is always more fatty in the veins than in the arteries, and it might be added that putrefaction is never observed in *oxidized* (arterial) blood, but solely in the venous blood, when at all.

Atheroma of vascular walls occurs only where the oxygen supply to them is diminished either by deficiency of blood or its own oxygen contents. The least oxidated layers are those most affected.

Putrefying and decaying sausages commonly undergo the fatty change, beginning in the center of the sausage farthest removed from access of air and oxygen. In adipocere formation from decaying flesh, fat is formed at the expense of albumin, as observed after bodies have been exhumed from the grave. In certain cheeses is observed fatty formation at the expense of the casein, due to the prolongation of the ripening process. All putrid cheeses possess an increased fat content as a product of the putrefactive change.

It is of interest to mention the analogy observed in the putrefaction of wood. Woody fiber when saturated with water and kept from the air, undergoes a softening, loss of texture and disintegration, though generally terminated short of the fatty change. Analysis by Liebig[7] showed that decayed wood always evinced more carbon than did sound wood, and the oxygen and hydrogen present exist in the same proportion as they do in water. Excess of either water or oxygen will arrest the process. Liebig determined that the hydrogen undergoes *combustion* in the above process, as in distinction to the oxidation process, in which *carbon* suffers oxygen combination. It appears from the above that bacteria enhancing putrefaction, probably exhaust oxygen from their culture media, while conversely fermentation organisms appear to favor *carbon oxidation*, which is not *per se* attended by fatty changes, though its acid products must be recognized as favoring an aftercoming process of acid produced suboxidation.

In the fatty degeneration of flesh the source of the carbon of the fat has long been a subject of conjecture.

Deficiency and absence of oxidases and oxygen supporters, as sodium and other alkalies, also have been observed to favor both the physiological and pathological fat formation. Voit and Bauer[10] have experimentally demonstrated that in fatty degeneration, as produced individually by phosphorus or carbonic oxide, both the intake of oxygen and the output of carbon dioxide, are diminished below normal, and that the process is accompanied by an increased output of urea, thus showing that the process of fatty change includes a coincident destruction of the nitrogenous elements, which are eliminated as urea, while the carbon elements seem to remain and suffer the fatty change. Here again we observe a perversion from the normal process, for with adequate oxidation and in beginning degenerations, even from suboxidations, the cells first part with their car-

bon elements, as is observed with the physiological tissue discharge of glycogen as dextrose. An extreme opposite to these processes is found in diabetes mellitus in which the entire proteid molecule is broken down, and in the deficiency or absence of oxidation, is eliminated as a great excess of both urea and glucose in the urine. Arteaga and Lusk[1] assert that 60 per cent. of the proteid molecule is resolvable into dextrose, hence the source of carbon in fatty degeneration is apparent. I have in the past, in common with many other observers, been misled by the enormous output of urea, into the belief that we have in diabetes a greatly increased *metabolism,* but elimination and metabolism are two different things, and my own researches certainly indicate in no uncertain terms that metabolism is not a unit of observation. Only by recognition and observation of normal and morbid *anabolism* and *katabolism,* as separate entities, are we enabled to intelligently and correctly recognize and draw accurate deductions from estimations of the intakes and outputs of metabolic processes. Thus both active and stagnant katabolism may be attended by an increase in the output of urea; in the first place by the increased oxidation by the carbon elements, as in active exercise, the normal activity of katabolism being parallel with the slightly increased urea output, and in the second place, where the active degeneration of the pronounced katabolic stasis of extreme suboxidation as in advanced diabetes mellitus, in which the cells are broken down so rapidly that both nitrogenous and carbon elements are eliminated together. Then the fatty degeneration comes in as an intermediate stage, in which the degeneration is less rapid, the katabolic stasis is more marked, the output of urea elimination is intermediate between the normal and the diabetic extreme, and the fatty metamorphosis of the 60 per cent. of carbon constituent of the protoplasm is in evidence.

An initial expression of protoplasmic suboxidation is a dissolution, separation and exudation of the collagenous elements of the cells, generally associated with the presence of an unusual amount of water; first observed in mucous and serous membranes and other epithelial tissues, or more rapid processes may be manifested by the gelatiniform or colloid degeneration of the least oxidated cells, during the process of which the vascular system becomes involved in the general accumulation in the system of colloid tissue detritus. In ratio to the relative efficiency of the several blood glands, including the liver, where the oxidation of the blood contents is the highest, the eliminations vary in the proportion of urea and ammonia, and the blood frees itself from the obstructing colloid detritus.

The blood, like the tissues, is seriously disorganized and degenerated, in proportion as it is suboxygenated and suboxidated. In addition to oligocythemia, leucocytoses and general cellular degenerations that are observed, it is important that suboxidation causes the blood to lose its normal powers of coagulation and singularly the coincident degeneration favors the formation of thrombosis and embolism. Reoxygenation promptly restores the coagulability and gradually overcomes the disposition to thrombi formation.

The closest analogy, I know of, to the degeneration of the cardiac muscle as a result of fatigue (sarcolactic acid), caused suboxidation, is that of the hound-chased hare, which after being entirely exhausted by fatigue (*run down*), its flesh immediately enters a fatty putrefaction without even first passing through the stage of *rigor mortis.* Obstruction of the coronary arteries is a potent cause of fatty heart, but suboxidation from muscular overwork and fatigue is a much more prolific cause.

In pronounced anemia, in cases of poverty of hemoglobin and of the entire blood volume, as after bleeding, we have the closest analogy to the suboxygenation of cardiac deficiencies, and their prime physical expressions are identical, namely colloidation and fatty degeneration. These processes vary in proportion to each other, in individual cases, and in different diseases, as governed by the general laws above mentioned.

All pernicious blood diseases which are attended with oligocythemia, and their oxidation degradations, as chlorosis, leucemia, pseudoleucemia, anemias, and especially progressive pernicious anemia, produce gelatiniform and fatty degenerations very similar to those observed in the suboxygenations of cardiac deficiencies. The general relaxed and flaccid condition of the tissues, the limp and languid state of the muscles, the succulence of the cells, the atony of the stomach and the general organoptosis tell of the general tissue gelatinification. The marasmi, edemas and hemorrhagicas indicate, in addition to the above condition, the implication of the vascular walls, the broken integrity of the blood and the dissolution of its constituents. The oligocythemia, the leucocytosis, the increase of urea and the diminished carbonic dioxide outputs, together with the subnormal temperatures show both the cause and effect of the suboxidation. Dilatations of the cardiac muscles occasionally occur unpreceded by hypertrophy, thus showing a skip over the period of nutritive gelatinification to that of textural laxity as manifested in the dilatation. The common occurrence of ulceration, fatty degenerations and the disposition to the formation of malignant growths and to pulmonary tuberculosis, as an ultimate termination, are to say the least, significant.

The irritable weakness of patients of these subkatabolisms, of both oligocythemia and cardiac deficiencies, and of the oxidase incompetencies of sexual evolutions and depressions, simulates common ailments characterized as of nervous origin; also, it may be added that extreme suboxygenations from any of the above-mentioned causes are responsible for muscular tension, spasms or epileptiform convulsions.

The idiopathic anxieties of heart disease are manifestations of this same irritability which assumes the form of spasmodic contractions or

convulsions in extreme conditions, and these conditions being less compatible with life than the relaxed ones, narcotics are administered as a choice of evils, the general basic condition being afterward restored by oxidation.

Colloid detritus does not *all* undergo fatty degeneration. Some of it suffers putrefaction, as also all gradations between putrefaction and the fatty change. Of course, more or less of it finds a partial or complete oxidation in some favorable situation.

Victims of cardiac debilities, in addition to the pronounced degenerations above described, also coincidently develop the milder grades of gelatinization of the whole body, which confers a kind of diathesis, by virtue of which marked degenerations are more rapidly and easily developed in susceptible situations. This condition finds frequent expression in the pulmonary tissues, which become gelatinized or even indurated; serous and mucous exudations cause vicious cycles by further embarrassing respiration, and hence oxygenation. The imperfect integrity of the lung tissues dispose them to permit hemorrhages and cause hemorrhagic infarctions, in events of pulmonary vascular engorgements that otherwise would be insufficient. The entire vascular system, owing to gelatiniform changes, suffers serum exudations, causing anasarca, when the blood tension is anything but high; though it must be admitted that changes in the blood itself are partly responsible for it. Vascular incompetencies in the brain also are thus manifested by apoplexy and by fatty changes.

There is an impression by many that the greater tenderness of the meat of stall-fattened animals is due to the cooking of the fat with the lean. This is not the case, however; the same suboxidation which is responsible for the fattening of the animal is also the cause of the softness and succulence of the lean tissues. The well-known effect on castrated male animals and the greater tenderness of the meat of the ox and the cow than that of the bull, and the greater ease with which they are fattened, accords with the observed relation borne by sexual virility to oxidation in man. The softening of meat due to prolonged keeping is equivalent to that due to suboxidation, both being due to degenerative processes.

It may be added that all tissues suffer a vicious cycle, for the accumulation of the maloxidized products of muscular metabolism add to the obstacles to further oxidation.

The heart muscle itself is a sufferer from subkatabolic degeneration. As a result of its first overwork, the formed *sarcolactic acid* lowers its oxidation, a corresponding slump occurs in the ability to oxidate the muscle, and the later formed acid. As a result of the tissue suboxidation we have first a nutritive hypertrophy (by virtue of which nutrition "phagocytosis" is augmented). Then, with the process of the gelatinization the hypertrophy is maintained or enhanced simply by the katabolic stasis in which normal anabolism maintains the balance, the katabolic oxidation and elimination being almost nil. The next stage, we may picture the fatigue extension of the muscular fiber, in which we may assume the muscular hyperplasia to have suffered a change to a longitudinal prolongation, thus the heart passes from a hypertrophy to a dilation, and with its extension of equilibrium length we observe a curtailment of its functional capacity.

The Author's Method of Treatment.—All these conditions must be remedied or the *Heart Cure* must itself prove a failure and the patient must pay the death penalty.

By the aid of my temporary prolongation of the heart's stimulation I endeavor simultaneously to restore the systemic oxidation, to lighten the load as much as possible of the heart's laborious task, and to rid the system of the autotoxication which incidental putrefactions have caused. The former is accomplished by the free inhalation of an abundance of *nascent* and purified oxygen gas, made fresh several times daily, not far from the bedside. It is administered through a tube from a convenient tank, or the whole atmosphere of a small room is impregnated to a point relieving the patient entirely of undue respiratory effort. If the patient is unable to acquire perfect oxidation from the oxygen alone I make up my mind that as the oxygen is fresh and pure, that the trouble is with the patient's powers of oxygenation or oxidation, and in view of the fact that deficiency of hemoglobin, alkalies and oxidases are almost the sole causes of such failures, I proceed to increase these factors, by administering iron internally, and enemas of 50 to 100 per cent. saturated solution of sodium bicarb., inflating the colon, with the temperature at blood heat. If the condition is very low I often add to this a quantity of hydrogen peroxide, which I vary acording to my judgment; also, in suitable cases, I add sodium chloride C. P., which I also vary according to the demands for additional stimulation. The other method employed is the administration of an active oxidase. I have been giving internally a glycerophosphate, or when the patient's stomach is irritated by the glycerin, and often otherwise, for a change, I give a phosphorated oil, preferably a cod-liver oil (but not with hypophosphites). The recently introduced sterilized tubes of glycerophosphates for hypodermic injection which have become so popular in Europe, bid fair to supplant the *internal* preparations for these purposes.

For the second indication, namely the clearing of the vascular system, I clear the portal system by oft repeated, very small doses of calomel and a saline cathartic. By warmth to the extremities I draw the blood as far as possible from the venous splanchnics and cause a determination of blood to the periphery, by cold water taken internally, between periods of eating and digestion. But the restoration of *oxidation* is by far the best remedy for the clearing of the circulation, the relief of resistance to arterial flow and the consequent relief to the heart.

For the third indication, the reoxygenation of the tissues is unparalleled, but the relief of serious anurias is so imperative to the acomplishment of that end that I must grant what its importance deserves, and here I must relate that in my hands, teaspoonful doses of hydrogen peroxide every three hours have restored the twenty-four hour urine to above 50 ounces in cases where one-twenty-fifth grain doses of nitroglycerin had singularly failed.*

It is of interest here to relate that I have repeatedly, promptly arrested cardiac hemorrhages with immediate inhalations of nascent oxygen gas, and by oxygen inhalations combined with soda *colon* injections I have promptly controlled and entirely reduced marked thoracic and abdominal dropsies, in one case within four days, that had previously been tapped twice weekly.

After the patient's improvement, to a point of sitting up a few hours daily, I hasten its continuance by light frictional brushings and massage, and I begin the bath treatment by immersing the feet in a carbonic acid or a capsicum bath, to be followed by the full brine and carbonic acid baths and the resistance exercises. Thus we accomplish the determination of the blood from the splanchnic to the superficial circulation, and from the intestinal vessels to the capillaries of the muscular system. The increased respiration and the reaction from the loss of heat, as do the exercises, greatly accelerate the general oxidation processes of katabolism, and the toning effect incident to it all is the result of the restoration of the muscular tissues which have generally suffered a subkatabolic and hyperplastic extension of the equilibrium length. I have no hesitancy in stating that the real secret of the bath cure lies almost entirely in its physiological effect, as a *cold bath* and that the carbonic acid and alkalies simply counteract the cold by stimulation, and make it possible for a person with cardiac debility to react against and after such a bath, from a temperature which they otherwise could not tolerate. Though carbonic acid is very exhilarating, other stimulants, as capsicum, mustard, ginger, pine needles, etc., are just as good and accomplish the same results. They are superior, in cases where patients do not well tolerate the inhalation of carbonic acid gas given off from the bath, and from which it is difficult to effectually shield the patient.

It is observed that the two principal degenerations of heart disease, namely gelatiniform and fatty metamorphosis, are entirely due to and dependent upon the suboxidation which results from cardiac and blood deficiencies and their vicious cycles, and are preventable, arrestable and restorable in the great majority of cases.

Where colloid degeneration is active, uric acid, as well as other suboxidation tissue products will be excessive, and at such times the portal oxidation of nitrogenous foods may be subnormal, and uric acid may appear from the nuclein elements of meats ingested. In event of such experiences, patients should be warned against Haig's methods of discontinuing red meats, veal, etc., which are of great nutritive value. Bear in mind that if the oxidative processes are ample for tissue katabolism they should be sufficient for proteid food. If both carbohydrates and proteids cannot be eaten, drop the former rather than the latter. Remember they are sometimes incompatible, but often a certain amount of a diffusible alcohol, whisky or brandy, will enhance proteid combustion, while a greater amount, or the same in carbohydrate combination will lessen it.

I have purposely omitted the consideration of the administration of iron, in cases of reduction of the hemoglobin index, for the reason that I assume that its place in medicine is already established. However, I must protest against the indiscriminate use of iron preparations in those other cases of debility, which are assumed without analysis of the blood, to be indications for iron.

Digitalis, while a most valuable drub for cardiac stimulation, is one of the most abused drugs in the pharmacopeia. Its further consideration I will not attempt here.

There are two drugs which, by comparatively recent demonstration, have proven to be very potent in these subkatabolisms, for drawing together and restoring tone in the relaxed tissues, which are administered by hypodermic injection, namely ergot and adrenalin. I have found them both of untold benefit in well-adapted cases, but the last named is a dangerous drug for careless prescribers, and when given by an attendant unskilled in its use, for *in nature* the adjustment of its supply by the adrenal glands is normally very accurate and fine, whereas pernicious results are often obtained by patients themselves or nurses administering it in the physician's absence, by unduly prolonging it beyond attaining the physiological effects, which they fail to recognize.

The proper adaptation of strophanthus, cactus, sparteine, caffeine, strychnine, nitroglycerin, amyl nitrite, quinine, potassium, iodide, etc., I make use of, as they are indicated, and following the rules commonly in vogue as recorded in the textbooks.

For reasons above recorded, arsenic, phosphorus (in excessive doses), lead and other metallic oxides (even mercury, in large doses) dispose to lower oxidation, and are distinctly contraindicated.

Continuous "doping" with liquors is to be discouraged. When uric acid, colloids and other vascular obstructions accumulate in excess, the most highly oxidizable and diffusible forms as whisky or brandy, are indicated, only for a few doses, best given in milk, to clear the portal circulation. However, for this purpose occasionally lemon juice or a citric acid beverage is best. In proportion as the alcohol is combined with carbohydrates, as in beer, porter, ales, stout and sweet wines, or, as wines that are very acid, the tendency to uric acid and colloidal increase is caused.

*I prefer the peroxide of hydrogen possessing the lowest acidity to the volume strength. Acid preparations will increase the anuria.

When not continually given, it is a very valuable stimulant for emergencies.

Both ice water and sulphuric ether, the latter in 10-drop doses, I have found valuable when administered just preceding food, as a help against the expulsion of the food (vomiting) in suitable cases. Rest in bed I compel until the compensation is sufficiently restored to insure freedom from ankle edema, while in the erect position, at least two hours daily.

I often institute full baths before the patient is able to walk to and from the bath, even from one room to another. The exercises I reserve until the compensation is fully restored, and until they can be given without fatigue to the patient. The least manifestation of fatigue or strain is an indication to desist. High blood pressure I reduce by freeing the circulation, as above narrated. Hemorrhages I always treat by the inhalation of oxygen, and internal administration of adrenalin and oil erigeron. The latter acting, I believe, as an additional oxygen carrier.

Intestinal putrefactions, autotoxemia, uremia, bradycardia and Cheyne-Stokes respiration are all indications for local or general increase of oxidation, and are due to toximias of suboxidation.

The rehabilitation of compensatory hypertrophy, I interpret to be a manifestation of enhanced oxidation of the heart, both owing to its reduction of volume, its decrease of equilibrium, length of the muscle fibers, and its consequent increased functional power and capacity.

Many intercurrent diseases and conditions exert marked influences upon the conditions present, which the well-informed physician will recognize and properly treat.

In cases when glycerophosphates are administered by the stomach, physicians must carefully discriminate against all the proprietary preparations containing an abundance of *alcohol* and *sugars*, in combination, which, while very palatable and elegant from the pharmaceutical standpoint, are practically worthless from the medical point of view, owing to the fact that the alcohol and sugar, as burnt in the liver, produce suboxidation in the same way, and quite as much as sweet wines, which will nearly or quite offset the good effects of the glycophosphates, and may cause fatty liver or gout in the bargain.

Users of oxygen which is more than twenty-four hours old, especially that compressed in tanks, will fail to obtain the results I have described. Absolutely pure and nascent oxygen, in my hands, has given the best results. The compounds of oxygen with nitrous oxide gas, *when fresh*, in the proportion of five parts of oxygen to one part of nitrous oxide, are occasionally a benefit in cases of cardiac excitabilities and anxieties.

In those cases where the bile pigments are deficient or absent in the feces and also where the ingested fats are immediately eliminated in the feces, instead of being conducted into the portal system; in both instances causing a superpale yellowness of the stools, I have found the administration of ox-gall and pancreatin with an excess of sodium bicarb., on an empty stomach of great value. In the first instance, the ox-gall supplies the general demands of intestinal digestion, and in the second case, it neutralizes the deficiency of bile in the assimilation of fats and makes possible their assimilation during periods of decline, otherwise impossible. I have found cod-liver oil of greater value than other fats in these cases, owing to its content of biliary elements.

After the patient has been restored to an apparent robust health, before the physician takes his leave, the patient should be given *a lecture*, a warning, as to his shortened limitations, how to maintain his compensation and oxidation, how to live within his limitations, at a happy neutrality between the extremes of overdoing on one hand, and a too sedentary life on the other. He must be taught how to eat, what to eat, what to wear, to avoid a chill, worry, mental, nervous and physical strain and fatigue.

Physicians should never neglect to inquire for specific histories in all heart cases, for, in my experience, they are not uncommon and they are the most difficult and unsatisfactory to treat, and they are the first to backslide and prove unresponsive to the best treatment. Even these cases, however, are well worth treating, and often admit of brilliant successes.

The acute heart failures, which sometimes occur without known cause, should receive a passing mention, for some of their manifestations are not sufficiently described in the text-books, and they are very significant to the expert. The so-called idiopathic anxieties of heart patients must be distinguished from the worries and anxieties of other troubles. A sudden development of nervous unrest, an intense picture of anxiety upon the face, with prominent veins, when associated with dyspnea, cough, distress, palpitation or oppression should receive prompt attention with potent restoratives. In such cases the writer has often responded with ammonia aromat., strychnia, digitalin and morphine simultaneously, the latter three hypodermically, in order to meet the requirement. Idiopathic abdominal pain, another symptom of acute heart failure must be met as above. In these cases, however, gelatinization of the vascular walls has, together with venous engorgement ultimately overdistended the splanchnic veins, and the pain is the result. The hypodermic administration of ergot or adrenalin, often accomplishes the contraction, and expulsion of the surplus contents of these veins. And in all of these oxygen inhalations, colon irrigations with normal salt solutions and sodium bicarb., hot fomentations to the extremities all help to tide over these cases until other measures can be adopted to meet the more "chronic" indications.

Nothing, other than narcotics, allays pain like bland alkalies, when brought in contact with the seat of the pain, even pain of the most severe burns is allayed and best treated by alkalies, dry, or in oil mixtures.

There are many persons both inside and outside of the medical profession who discourage the *heart cure*. They taboo the idea of treating and prolonging life, in these cases, which so invariably have heart lesions which cannot *per se* be cured. This, however, I believe to be a great mistake, as, for the patients personally considered, I never met one who did not desire his life prolonged, and a restoration, of even ever so limited possibilities for future usefulness. Many men, at a time of life when they have acquired heart disease of serious import are so situated that the family sustenance does not depend upon hard labor, and their advice even, coupled with a long ago obtained knowledge of a business or enterprise, is of great value to his interests, or that of his successors. When independently wealthy, a man's or woman's prolonged life, if comfortable, happy and free from pain, is a great source of happiness to their family and friends. Often mercantile or other business houses will continue to pay large salaries to valuable employes, even if incapacitated for any but light mental work and valued opinions. I have friends in the profession, who, with shortened limitations and artificially sustained compensations, have practised the lighter specialties in medicine for many years, to their own satisfaction, profit and happiness.

Very often a physical breakdown will come to men who are entirely unprepared for it, and their death at such a time would prove a great calamity to their interests, and to their families. I have had the satisfaction often of restoring and maintaining men under such circumstances, and even tided them over until sons could be taken from school and trained, under the advice of the patient, to successfully conduct large interests. I have a gentleman now under my occasional care, who as custodian of one of the great New York municipal institutions, is on his feet daily, Sundays included, from eight to twelve hours, yet he has a severe heart lesion, and has been rescued from imminent death two or three times since I first assumed his care three years ago. Many persons, rescued by the *heart cure*, live many years, and very useful lives, even to die finally of some disease other than of the heart. Some attain quite a ripe old age, with very good compensation and oxidation, while others, for one reason or another, do not live out one additional year. Altogether, however, it favorably compares with other special lines of practice.

My object in contributing this monograph, is not to set forth any personal accomplishments, or brilliant achievements, but rather to give to the profession, as completely as my space will permit, a plan of treatment, based upon what I believe to be a sound etiology and pathology, which has been successful in my hands and which has convinced me will lower the present cardiac mortality over 50 per cent., when in general utilization by the profession. For further exposition of the physiological effects, I refer the reader to my former article.[12]*

*The bibliography of this monograph on the heart is so full as not to require repetition here.

Notwithstanding my desire to see my methods universally adopted and improved upon by other men, my knowledge of the pitiable ignorance of so many professional men on heart physiology, pathology and therapy, causes me to include a word of caution to such men, not to undertake the treatment of cardiac cases without a thorough foundation of information and experience in this line, not excepting a good knowledge of the modern methods of physical examination and diagnosis.

I have purposely limited my article to a treatment basis, that I feel has elsewhere been neglected or undeveloped, and I have made no effort to compass the *full scope* of the therapentics, even as I practice it; for that, the reader must be referred to the text-books and special works on the heart, and, if possible obtain hospital experience. Bath-house attendants and nurses should be forbidden by law from attempting the administration of *heart* treatment, except under medical superintendence, for it must be understood that these methods are not necessarily harmless in ignorant and inexperienced hands, and that there is nothing so easy as to injure or kill a heart patient, simply by mistakes that would be almost immaterial in the treatment of many ailments.

It is not the mechanical difficulty of giving a bath, but the knowledge and skill necessary to properly treat a person so vitally afflicted, that should cause this treatment, in all its phases, to be wrenched from unskilled and unprofessional hands.

The superiority and essential requirement of a medical man, in these cases, lies not only in his resourceful general knowledge of heart diseases and its resultant and complicating conditions, but also in his skill in the delicate adjustments, which are so necessary to success. Even trained masseurs and other attendants upon caridac patients often require the strictest superintendence by the attending phyician, to insure against awkward, indelicate or careless attentions, thus overexerting the patient, underexerting themselves, or rough handling and careless assistances and administrations.

I have occasionally found it difficult to secure capable persons for the administration of the baths and exercises, even from the ranks of trained masseurs. Even towel rubbings are applied so vigorously and regardless of the patient's tolerance of it as to bring on extreme fatigue, prostration and in consequence acute heart failure, which often requires days or weeks to overcome.

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THE RELATION OF MILD TYPES OF DIPHTHERIA TO THE PUBLIC HEALTH.

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No one who has occasion to examine much that has been written about diphtheria during the last fifty years can fail to be impressed by the noticeable decrease in the volume of the literature of the subject during the half dozen years just passed. It is probably not true that, even with the passing of its terrors, diphtheria has lost much of its interest for physicians, for, although it may no longer be called "the most dreaded disease of childhood," its victims are still numbered by thousands. It is controversy, in medicine, as elsewhere, which drives people to their pens, and recent researches have taken so much that relates to the causation and diagnosis of diphtheria from the arena of the medical journals and placed it among the well-demonstrated facts of medical knowledge that the unending discussions of the last generation find no place in the literature of today. The great importance of the bacteriology of diphtheria has lately overshadowed its clinical aspects, and this, perhaps, by limiting the number of contributors, has lessened the output of medical articles.

It is possible that the future will not provide material for such accounts of great epidemics of diphtheria as help to fill the early transactions of state medical societies and the health reports of England. A study of some of these in the light of our present conceptions of the transmission of disease is wonderfully interesting. Minute descriptions of house-epidemics and school-epidemics, which were intended to prove conclusively the malign influences of ground air and "diphtheria-bearing clays" are invaluable mines from which to obtain confirmation of modern ideas as to the spread of this disease. And yet one is continually struck by the shrewdness of the opinions advanced by some of the earlier writers, and by the closeness with which deductions reached purely by the exercise of logic correspond with the results of the laboratory work of the last fifteen years.

It is hardly possible to state where the earliest record can be found of the fact that *during epidemics of diphtheria, there is usually an increase in the prevalence of simple sore throats,* but the literature to the present time is filled with its repetition. A report of an epidemic in Delaware County, which was presented at a meeting of the New York State Medical Society in 1861 contains the following:[1] "Every reddened throat was not diphtheria, while a very few throats in a circle around the focus, whose diameter was a mile or more, whether young or old, *failed to exhibit more or less traces of the prevailing epidemic influence.*"

Dr. Franklin Parsons, in a report on an outbreak which occurred in 1887 in the parishes of St. Stephen's and Roche, England, says:[2] "As regards the means by which the disease was spread, I am of opinion that, in most instances, its occurrence may be accounted for by infection from a previous case, more especially if we may allow that the known cases of diphtheria were accompanied by a number of mild, unrecognized ones. I learned from more than one source that sore throats were very prevalent in Roche last autumn. Thus the schoolmaster at the Roche Board School states that at the time diphtheria was prevalent, and to a less degree before and afterward, many of the school children had sore throats and used to come to school with their necks tied up in flannel. Experience gained elsewhere has shown that outbreaks of diphtheria are frequently accompanied by a similar prevalence of sore throats not distinctly diphtheritic in character, and has shown it to be probable that, though such cases may not, from a clinical point of view, come within the definition of diphtheria they are essentially of the same nature, and that a susceptible person coming in contact with one of them may contract the disease from it in a severe form."

Physicians and nurses are particularly likely to have such sore throats. A friend of mine tells me that more than once while he has been in close attendance upon cases of diphtheria he has had a violent pharyngitis which did not yield readily to ordinary treatment, although frequent examinations of the throat failed to reveal pseudomembrane.

It is needless to multiply such references, for most physicians who have had outbreaks of diphtheria in their practices can recall instances where mothers and nurses of sick children have been affected with this form of sore throat, and, indeed, the matter has received sufficient notice in most of the text-books.

It is with the diagnosis and management of such cases that we are especially concerned with reference to the public health. It is most essential that their existence should receive official recognition and that they should be assigned a definite place among the varieties of diphtheria.

As Dr. H. W. Hill has pointed out,[3] a number of different conditions may follow the infection of an individual with the bacillus of diphtheria. The disease which we all recognize as diphtheria, with the presence of pseudomembrane and the evidences of systemic poisoning, results from the infection of a susceptible person with virulent diphtheria bacilli. When insusceptible persons become infected with virulent diphtheria bacilli no lesions result, but, as is well known, the bacilli may be transmitted to susceptible persons

and cause the disease. That such infected well persons are a common and potent cause of the spread of diphtheria has been abundantly shown by recent investigations.[4]

Susceptible persons may become infected with diphtheria bacilli wholly lacking in virulence. No lesions follow this occurrence, and the spread of the disease is not aided by such persons, for it has been shown that non-virulent bacilli do not regain virulence readily, if at all.

In this paper it is with two other combinations of the diphtheria bacillus and the individual that we have to deal. Relatively insusceptible persons may become infected with virulent diphtheria bacilli and susceptible persons may become infected with feebly virulent bacilli. In both of these instances the resulting condition is the simple sore throat so prevalent during epidemics of diphtheria. Perhaps the greater number of these cases arise from the insusceptibility of the individual, and this insusceptibility in the vast majority of instances, is due to the immunity conferred by age.

The nomenclature of the various conditions just referred to is a matter of some importance. Several names have been suggested for the simple pharyngitis due to infection with diphtheria bacilli. "Catarrhal diphtheria," "bacteriological diphtheria" and "diphtheritic sore throat" are some of them. It is very important that the name selected should not permit the condition to be confused with that very different one, pseudodiphtheria, the essential feature of which is the presence of a membrane resembling that of diphtheria but due to other organisms than the Klebs-Loeffler bacillus. "Diphtheroid" would be an appropriate name for the condition, for it is *like* diphtheria in the most important feature—the presence of diphtheria bacilli—and the name might suggest to the public the somewhat analogous "variola" and "varioloid," but unfortunately the name diphtheroid has already become associated with pseudodiphtheria. Perhaps catarrhal diphtheria is as good a name as any of those which have been already suggested.

The diagnosis of catarrhal diphtheria (to continue to use that name for the present) *depends entirely upon bacteriological examinations.* However suspicious the circumstances surrounding the case may be, or however direct the history of exposure, it is obvious that a diagnosis cannot be made with certainty without taking cultures. In cities where bacteriological laboratories are maintained by the Boards of Health this is no particular disadvantage, but in places where such facilities are lacking the diagnosis of catarrhal diphtheria must be an exceedingly rare one. When an outbreak of diphtheria is in progress, in even a remote village, with an unusual prevalence of sore throats and especially when these seem to be responsible for the continuance or the epidemic, it may become necessary for the local health authorities to have cultures taken, and it is interesting to know that in New York State there is no place more than 100 miles from a laboratory where work of this sort could be done. Inoculated culture tubes have been received at the laboratory of the Willard State Hospital after being three days *en route* in both winter and summer and satisfactory growths of diphtheria bacilli obtained from them.

As to the frequency with which cases of catarrhal diphtheria occur there are no adequate means for determining. It has been suggested that the unrecognized cases in an epidemic exceed in number those which are detected. Diphtheria has prevailed at the Willard State Hospital for four years. During that time 158 cases of pharyngeal diphtheria have occurred, four cases involving the larynx, six cases of nasal diphtheria and one in which the vagina, the rectum and the fauces were all involved. From the commencement of the epidemic, every case of sore throat of whatever nature which has occurred among the 2,700 patients and employes residing in the institution has been scrutinized very carefully and a culture taken. There have been found nineteen cases in which redness and swelling of the throat with constitutional disturbance have been accompanied by the presence of diphtheria bacilli. These cases presented absolutely nothing by which the diagnosis could have been made without the aid of cultures. The persistence of the bacilli and the consequent duration of quarantine did not differ from that in cases of "true" diphtheria. As nearly all the people exposed were adults, it might have been expected that the number of catarrhal cases would have exceeded 7 per cent. of all. A few cases among the inmates undoubtedly have escaped notice.

The management of these cases of catarrhal diphtheria is the *crux* of the whole matter. It will be conceded by every one that the first essential is that physicians admit that diphtheria bacilli may be the cause of an inflammation of the throat in which no pseudomembrane is formed and that such cases are quite as capable of causing others as cases of "true" fibrinous diphtheria. It is useless to call them "diphtheria" without a qualifying adjective for the laity from whom, we must not forget, all our quarantine laws have their origin, cannot easily be persuaded that the disease which strangles the little child and the one that causes a transient swelling of the mother's pharynx and tonsils differ only in degree, but if the term "catarrhal diphtheria" (or a better one) be given as definite a clinical application as "varioloid" there is hope that it would speedily find a place in our sanitary laws. Like persons with the ambulatory form of other diseases, those suffering from mild forms of diphtheria are a source of much more danger than those "safe" in bed.

With the facts just stated in mind there can be little difference of opinion as to the measures which will best serve the public health in dealing with cases of catarrhal diphtheria. The condition should be included, under its own name, in the list of notifiable diseases. The same sanitary regulations which relate to the management of diphtheria should be extended to it and, as its recognition depends wholly upon bacteriological ex-

aminations, it is evidently a public duty to provide facilities for this work. That the spread of diphtheria and the continuance of many prolonged epidemics depend, in no small measure, upon these cases of mild diphtheria in adults is a fact which cannot be ignored.

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CHRONIC VILLOUS ARTHRITIS, WITH SPECIAL REFERENCE TO ITS ETIOLOGY AND PATHOLOGY.

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AND

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(Continued from Page 920.)

Case No. 23.—October 31, 1902. R., male, twenty-six years of age; a teacher by occupation. Diagnosis, loose cartilage (semilunar). The exciting cause of his illness is trauma. The onset occurred in October, 1902, due to an injury in a football scrimmage. It was accompanied by pain, swelling, limitation, locking, and partial loss of function. No treatment for three weeks, then fixation in plaster. The right knee-joint was involved. It was slightly swollen, had the normal amount of motion in flexion, and could not be completely extended. Palpation was negative. Tenderness over int. condyle. A lateral internal incision was made and the capsule was found to be normal with a slight excess of fluid. Partially detached semilunar cartilage removed. There was one fringe which was attached to the inner ligamentum alæ. The fringe was irregular in shape, of a reddish-purple color, and a soft consistency. No hemorrhage, and irrigation and ligatures were not used. The capsule was closed with silk, with no drainage. Plaster splint applied. The stitches were taken out in one week, and manipulation was tried at the same time. The treatment consisted of flannel bandages and daily manipulations. On January 6, 1903, the amount of motion was normal, there was no swelling or pain, and the functional result was perfect.

Pathology.—Specimen consists of two hypertrophied synovial fringes from behind the patellar tendon, vascular, and of a fatty consistency, 1- 1.5 cm. in diameter. Also thin narrow strip of cartilage which had become almost entirely detached and blocked to some extent the normal joint function of right knee. Microscopical. Periphery of section deeply infiltrated with round cells and very vascular. The central portion consists of adipose tissue with thin feebly staining strands of connective tissue scattered throughout, and the vessels are fewer and of large size for the most part.

For Case 24 see *Boston Medical and Surgical Journal,* March 19, 1903.

Case No. 25.—December 28, 1902. A. D., male, twenty-eight years of age. Diagnosis, trauma. The patient's family and past history are negative. His present illness dates back to an injury to the knee eighteen years ago, caused by trauma to knee due to a fall. The joint is painful in walking and is swollen. Some flexion is possible and the function is impaired. Arthrotomy was performed at the Carney three years ago. Recurrence followed two or three slight injuries. The right knee was involved and swollen, suggesting rheumatoid. Motion quite free. A considerable fringe formation could be palpated and there was no tenderness. A lateral incision over the inside of the joint was made. No fluid or fibrin was found, but several small fringes and considerable thickening and some adhesions. In the treatment no ligatures or irrigation were used. The capsule was closed with silk, was not drained, and a plaster dressing applied. The stitches were taken out in one week. In February, 1903, flexion amounted to a right angle with no swelling or pain and a good functional result.

Pathology.—Fringes from internal and external portions of knee-joint, bound down for the most part and not easily separated. They entirely blocked the joint space. They were removed in small pieces, and had a fibrous quality. On the outside of the joint was an accumulation of tissue of necrotic appearance, resembling a cyst, which contained a small amount of fluid from which no cultural growth was obtained. Microscopical. Feebly staining fibrous tissue in one portion of the section, which did not contain the cortical portion of the mass of tissue in its entirety. This tissue becomes more and more infiltrated with adipose tissue on going inward, until adipose tissue cells of larger size, and an irregular network of slender, twisting, feebly staining fibers fills the field. There are numerous vessels, their walls much hypertrophied, and their lumina often obliterated, while the nuclei of their sheaths stain brightly.

Case No. 26.—December 31, 1902. L. A. G., female, thirty-two years of age. Diagnosis, loose cartilage. Her family and past history are negative. The exciting cause of her present illness was a fall on the left knee four years ago, in 1898. The patient fell, striking her knee on the sidewalk, causing pain, and a slight swelling below the patella. Motion is limited to 50° of flexion, guarded. There is no locking, and a partial loss of function. At the time the patient was laid up for five weeks, and in 1899, and again in 1900, the knee-joint gave out. This last time the knee was operated upon and a fringe removed. In January, 1901, the soreness returned.

The patient was a soft, flabby woman. Her left knee-joint was involved, slightly swollen in appearance, with 50° of flexion, palpation negative, and tenderness over attachment of semilunar cartilage. A lateral incision was made on the inside of the knee-joint, showing no fluid or

fibrin, but a good-sized lipoma and a detached internal semilunar cartilage. The fringe was vascular, yellow, and of a soft consistency. There was no hemorrhage. No ligatures or irrigation. Silk was used to close the capsule. It was not drained and a plaster dressing was applied. On May 8 the amount of motion was more than a right angle, with practically no swelling, no pain, and the patient used the leg freely.

Pathology.—Specimen consists of dark, firm, cartilaginous appearing mass, 2 cm. in length, and a mass of soft tissue, 2x2 cm., from interior of knee-joint. The latter is reddish in color, slightly lobulated, fatty consistency, resembling a degenerated fringe. Microscopical. Specimen consists of a mass of pure adipose tissue, save for a few thin striæ of connective tissue and two irregular solid masses of this tissue with few feebly staining nuclei and the appearance of advanced necrosis of granular and hyaline type. On this latter tissue are a few cells which apparently represent the remains of atrophied vessels. Throughout the section no patent vessels.

For Case 27 see *Boston Medical and Surgical Journal*, March 19, 1903.

Case No. 28.—February 10, 1903. M. C., female, thirty-two years of age. Diagnosis, trauma. Her family and past history are negative. Patient has a neurotic temperament. Her present illness is attributed to an injury to her knee from the horn of a cow fourteen years ago. The acute onset occurred one year ago, without preceding cause, with occasional trouble since. Patient has pain at times, moderate swelling, complete extension being impossible, with locking at intervals occurring in position of flexion, on which occasions patient has limped for several hours. Function is otherwise good, but there has been no improvement. The outside of the left knee-joint is involved. There is a slight swelling below the patella, and the left knee is 1 cm. larger than the right. No redness and motion to within 10° of complete extension. The swelling is soft and boggy on palpation and there is a small area of tenderness over the swollen portion. On February 13 an incision was made on the outer and inner aspect of the left knee. The capsule was not thickened and no fluid or fibrin appeared. One large fatty mass of fringes filled the entire lower portion of the joint cavity, loosely attached throughout to the synovia in shape an irregular lobulated mass 5 cm. in greatest dimension, with an abundant blood supply. The mass was of a yellowish-red in color and soft and yielding. The growth was dissected off the synovia. Considerable hemorrhage occurred but ligatures were not used. Hot water irrigation was tried and the capsule closed with silk. No drainage and a plaster dressing was applied. The general postoperative condition was good, and the stitches were taken out in eight days. The patient was at once manipulated and bandages and applications were used. Swelling, pain and redness appeared and persisted. On March 5 an incision was made over the outer aspect through the capsule, and 150 cc. of clear, straw-colored fluid evacuated. Healing took five days, after which there was a disappearance of symptoms and motion of the knee was rapidly regained. In May, 1903, the amount of motion was complete with no swelling or pain, and a perfect functional result.

Pathology.—Specimen consists of an irregular mass of tissue, 5 cm. in diameter and 1.6 in thickness, from lower portion of knee-joint, behind and to either side of patellar tendon. Growth was attached by numerous adhesions to synovia, not by a single pedicle. Very vascular, red to gray and yellowish in color, the tissue of a half fatty, half fibrous consistency, roughly lobulated, with several large tabs of yellow fatty tissue. Microscopical. A thick cortex of connective tissue, bordered by a single layer of endothelial cells, and marked round-celled infiltration of the outer portions. Thick-walled vessels very numerous. Going away from the periphery the connective tissue gradually gives place to adipose tissue, and persists only in irregular striated formation, while the very numerous vessels have extremely thickened walls and are often entirely obliterated.

Case No. 29. February 20, 1903. W. G. M., female, thirty-seven years of age. Diagnosis, rheumatoid arthritis. Family and past history of the patient are good. Rapid pregnancies (married at eighteen), and much care and worry were the exciting cause of her present illness. The onset occurred five years ago with pain and swelling, but no limitation or locking. Loss of function has been gradual, and there has been a gradual extension to other joints. Treatment has been general, medicinal principally, with hydrotherapy and diet. The knees, elbows, wrists, feet and shoulders are involved. Spindle-shaped swelling. Motion of knees was limited about one-third. On palpation soft, semifluctuant, and with slight tenderness on pressure. A lateral incision was made in both knees, and the capsule was found to be thickened and congested, with no excess of fluid and considerable fibrin. The fringes were numerous, generally attached to the synovial membrane, arborescent and small in shape, vascular, purple in color, and soft. Ligatures were not used, and the joint was irrigated with hot salt solution. Capsule was closed with silk. The wound was not drained, and a soft dressing was applied. Diet and general tonics were prescribed. The stitches were taken out in one week and daily manipulation after the first week with hot and cold douches were given. In May, 1903, the amount of motion was good, swelling slight, no pain, and fairly good functional result.

Pathology.—A dozen synovial tabs of varying size, the largest 4 cm. in length, narrow and with fringe-like processes, growing from the synovial membrane of knee-joint. Color varies from grayish white to reddish-white, while several are harder and contain much brownish pigment. Of fatty fibrous consistency and very irregular in shape. Microscopical. Cortex shows a thin lin-

ing of a single layer of endothelial cells. Within is a broad band of fibrous tissue densely infiltrated with small round cells, often arranged in clumps and whorls. This round-celled infiltration extends well into the interior of the section, but is finally replaced by loose connective tissue arranged very irregularly. Still farther from the periphery are numerous aggregations of fat cells, not, however, to the entire exclusion of the connective tissue. Very numerous vessels, whose endarteritic changes are very noticeable.

Case No. 30.—March 3, 1903. H. L. R., female, thirty-five years of age; nurse. Her family and past history are negative. The history of injury is indefinite.

The onset occurred five months previous, with a sensation of fulness and pain in left knee, followed by swelling. The pain, however, was not acute, but the swelling was symmetrical and quite marked. Extension was not quite complete and function was not much impaired. There was no improvement under strapping, and patient was in bed three weeks, after which crutches and bandage were used. Patient was a neurotic, well-nourished woman. The left knee-joint was involved, and had a swollen appearance on either side of the patellar tendon; swelling apparently of synovial membrane. Fifty per cent. of normal motion only permitted. Crutches and strapping having produced no improvement, patient was operated upon on April 18, 1903. An incision was made over the outer and inner aspects of the left knee. Fluid and fibrin were not found in excess, but there was a large fatty mass occupying upper and outer part of supra patellar pocket, with a similar condition on the inner side. There were also three or four small fringes about the patella and beneath the patellar tendon, attached to the synovia and quite freely movable. These were irregular, flat, very vascular, yellow to red in color, and of a soft and yielding consistency. The hemorrhage was slight. No ligatures. Silk was used to close the capsule; no drainage, and soft dressing was used. The stitches were taken out in one week and manipulation was performed during the third week. At the present date, May 13, 1903, function has not yet been restored to more than about one-half normal. The amount of motion is nearly a right angle. There is some swelling and pain on forcible flexion. And as yet the functional result is imperfect.

Pathology.—Three large irregular tabs from 3 to 2 cm. in length, composed of innumerable minute fringe-like processes, with twice that number of smaller synovial tabs, from a single joint. Attachments to synovial membrane by pedicles of various sizes, all very vascular, of varying color, ranging in same specimen from purple-red to gray and yellow, and of a distinctly soft, yielding, fatty consistency. Microscopical. The cortex shows a connective tissue basis, infiltrated especially on the extreme edge with numbers of small round cells, and interspersed with numerous blood-vessels and spaces filled with blood. In places this cortex is regular in outline, but sometimes it forms irregular tab-like projections, in which the infiltration is much more marked. The central portion of the tissue consists of irregular wavy bands of fibrous tissue separating clumps of fat cells, while numerous vessels appear, the smaller with occluded lumina. A thin cortical lining of flat cells with long nuclei is very apparent in this specimen.

Case No. 31.—March 18, 1903. C. H., female, aged sixteen years. Diagnosis, trauma. Her family and past history are negative. Her present illness was caused by a slight fall eight years ago, and a slight swelling occurred shortly after. The pain has always been very slight, but the swelling has persisted. There is no limitation or locking, although the patient is somewhat disabled and has walked lame at times. The trouble has been persistent. Aspiration was tried one year ago and only a small amount of fluid appeared. The left knee-joint was involved and was swollen 2 cm. more than the right. The arc of motion was normal. The swelling was symmetrical on both sides of the knee, fluctuating and with no redness. On either side of the patella there was a slight tenderness. On March 20 an incision was made on the inner and outer aspect of the knee. The capsule was normal, and one ounce of clear fluid was found. The operation revealed innumerable fringes, rarely over one cm. long, studding the entire inner wall of the joint, attached to the synovial membrane. These were delicate, pedunculated, dendritic outgrowths, very vascular, dark red in color and yielding in consistency. Considerable hemorrhage took place, vessels ligated. Hot water irrigation. The capsule was closed with silk; no draining was done, and a plaster dressing was applied. One week after operation stitches were taken out, and on May 4 right angle flexion was obtained by manipulation under gas. Very few adhesions appeared. The case is not yet discharged, because of adhesions in the joint, the result of injury to the joint membrane from scalding. At this date, May 13, about 15° of free voluntary motion, considerable thickening of the soft parts, but apparently good motion can be obtained.

Pathology.—Six irregular masses of tissue, the largest 3 cm. in length, each composed of a network of very delicate tongue- and club-shaped processes, reaching .5 in length, radiating from a pedicle attached to the synovia. Some of the smaller ones are less fine and delicate and tend to coarser lobulations. Reddish-gray in color, soft and yielding in consistency. Microscopical. Specimen consists of an irregular body cut in cross section with innumerable finger-like processes projecting from it, more or less tightly packed. These show traces of the original endothelial lining. Throughout is a small round-cell infiltration of varying degree, especially about what appear to be the remains of blood-vessels. The whole mass consists aside from these elements of a homogeneous mass of necrotic tissue which has undergone hyaline degeneration. No traces of connective or adipose tissue cells.

Case No. 32.—March 19, 1903. E. G., female, thirty years of age; occupation, housework. Diagnosis, acute arthritis. Her family and past history are negative. There is no known cause for her present illness. Her trouble is acute arthritis in the left knee. Eight years ago and four years ago she had attacks and she since has had a similar attack. The present attack dates nine months back. Pain at irregular intervals, often severe, is referred to the patella. It is accompanied by slight swelling, with no limitation or locking, but with grating and grinding of the joint on starting to walk after resting. At such times patient walks with a limp, which soon wears off. There has been no improvement in her condition. The left knee, which is 1 cm. larger than the right, is the joint involved. On the outer aspect of the patellar tendon is a swelling the size of a quarter of a dollar. The arc of motion is normal. The swelling is soft and boggy, with no redness or tenderness. There is one large lipomatous fringe on the outer aspect of the joint attached to the synovia by a broad pedicle. This is irregular and lobulated in shape, very vascular, yellow-red in color, and of a fatty and yielding consistency. Otherwise the joint is normal. The growth was excised. A moderate hemorrhage occurred. No ligatures were used. Hot water irrigation, capsule closed with silk. The wound was not drained and plaster dressing was used. The postoperative condition was excellent and the stitches were taken out after seven days. Manipulation immediately followed with bandaging. In one week 90° of flexion was possible. On May 6 normal flexion and extension with no swelling or pain, and an excellent functional result was procured.

Pathology.—A lobulated, yellowish, fatty growth, 5x3 cm., with a broad attachment to the synovial lining of the knee-joint. The attachment very vascular, and darker in color than the bulk of the tumor mass. Tissue of a gristly nature on palpation. Microscopical. A very thin cortex, often no more than a thin endothelial lining of a single layer of cells, but in places containing fibrous tissue with round-celled infiltration. The bulk of the tissue composed of adipose tissue, and numerous vessels of varying size in cross and longitudinal section, nearly all of them with obliterated lumina.

Case No. 33.—April 16, 1903. C. F., male, fifteen years of age; office boy. Diagnosis, relaxed joints. His family and past history are negative. There is no known cause for his present illness. His general condition at the time was poor. The onset was gradual and began seven months ago. Sharp, not constant, pain beneath the patella, especially when sitting. Patient noticed no swelling, and had no limitation or locking, but a sensation of crackling and slipping in knee. He can walk about. The symptoms have increased and are chiefly in the right knee. Both knees are involved and a slight swelling appears on either side of the patellar tendon. The arc of motion is normal. On palpation a sensation of slipping above and inside right patella. There is no tenderness. On April 8 an incision over the inner aspect of the knee. The capsule was not thickened and there was no fibrin or fluid. Four or five excrescences, the largest 1 cm. in diameter, were attached to the synovial membrane. They had a broad base, tapering to a blunt point, were lobulated, rich in blood, of a red color, and firm and fibrous. These fringes were excised with a slight hemorrhage. A few small vessels were tied with ligatures, and hot water irrigation was used and the capsule was closed with silk without drainage. Plaster dressing was used. The general postoperative condition was excellent and the stitches were taken out in eight days. Immediate manipulation was given and function was restored in one week. In May, 1903, the amount of motion was complete, with no swelling or any pain, and a perfect functional result.

Pathology.—Three small tabs from synovial surface of knee-joint, the largest 2 cm., the smallest 1 cm. in length, attached to membrane by broad base, and tapering outward to a point. Slightly lobulated. Of gray-red color and fatty-fibrous consistency. They projected prominently from surface of membrane. Microscopical. A thick cortex of connective tissue densely infiltrated with small round cells, the enclosing membrane not apparent. Numerous small thick-walled vessels. Within this layer is a layer of normal connective tissue which as it goes inward becomes more and more infiltrated with fat cells. Throughout this inner portion numerous thick-walled vessels running outward toward the periphery and surrounded with varying amounts of connective tissue. Numerous small vessels also present, often with occluded lumina.

Etiology.—Local tissue changes are effected in many different ways. In the condition here being considered, it would seem that the causes might be classified under the heads of (I) traumata, (II) infections, and (III) diathetic conditions.

1. Trauma.—Under the head of traumata are to be considered (1) direct blows and injuries to a joint and (2) indirect injuries, the consequence of strain to the joint from faulty position resulting in impairment of function. Traumata also result from within the joint itself, as when (3) a semilunar cartilage becomes partially detached, causing impairment of the function and, in some cases, direct violence to the synovial membrane (*e.g.*, Nos. 19 and 23). (4) Loose bodies in a joint, the so-called joint "mice," are capable of causing synovial irritation. (5) Forcible wrenches or lacerations of the ligaments of the joints (either the supporting external or the internal), weaken the joint, cause a relaxation of the ligaments, impair the function, and may thus cause the villous hypertrophy. (6) Flat and pronated feet, by causing strain to the internal lateral ligaments of the knee, are common causes of congested or hyperæmic knees, particularly in stout and flabby individuals, usually women. This condition is not uncommonly an accompaniment of the early convalescence from the confinement of pregnancy (*e.g.*, No. 12), and is also occasion-

ally met with at puberty in rapidly growing but sickly children, where there is much muscular and ligamentous loss of tone. We have also observed it in a young woman in whom there was some knock-knee and elongation of the patellar tendon. This was accompanied by considerable relaxation of the capsule of the knee-joint and thickening of that portion of it on either side of this tendon at the level of the line of the joint. Fibrinous clots cause sufficient trauma to irritate the synovia.

II. Infections.—Among infections first of all should be placed (1) tuberculosis. Some tuberculous joints show it more than others. As a rule, those in which the process has shown itself primarily in the soft structures of the joint rather than in the bones illustrate villous hypertrophy most decidedly. Usually, a tuberculous condition can be readily diagnosed clinically, and the aid of the microscope is rarely necessary. The difficulty of the histological diagnosis of these fringes has been demonstrated once in our experience where excision of the knee was performed following a pathological diagnosis of joint tuberculosis. The subsequent history made the diagnosis of joint syphilis much more probable (see Case 2). It has been shown occasionally that tuberculosis has grafted itself upon an ordinary hypertrophied fringe, which has evidently been pre-existent to the tuberculosis. (2) Gonorrhea, and probably other infective processes, cause villous hypertrophy. The writers have seen this in two cases here reported, namely, Nos. 21 and 22. In the more rapidly developing inflammatory conditions there is not as much villous enlargement as in the more chronic processes, probably because the invasion of the synovial membrane with such numbers of round cells prevents the folding up of the membrane, and the vascular changes are not so conspicuous as in the subacute processes heretofore mentioned. (3) Syphilis. The extensive hypertrophy of the synovial membrane due to syphilis has been mistaken both before and after exploration of the joint for rheumatoid arthritis. In one of our cases the correct diagnosis was arrived at when, one and one-half years after the arthrotomy, the tissues of the knee broke down and typical syphilitic ulcerations appeared. These cleared up with great promptness, and the swelling of the knee almost disappeared under large doses of the iodide of potassium (*e.g.*, 2 and 6).

III. Diathetic.—Under this head we have rheumatoid arthritis and osteo-arthritis. By the former we mean that polyarticular joint affection of the young adult which is characterized by spindle-shaped swellings of the joints affected, thickening of the joint capsule, and atrophy of the cartilage and bone. By osteo-arthritis we mean that polyarticular affection, usually of later adult life, characterized by hypertrophy and lipping of bone and cartilage, causing what is known as Heberden's nodes when the terminal phalanges are involved, and morbus coxæ sensilis when the hip is involved. Both of these diseases are accompanied by great villous hypertrophy of the synovial membrane, rheumatoid being much the more common.

In several of the cases here reported this was the etiological factor, namely, Nos. 5, 8, 9, and 29. That osteo-arthritic joint involvement, due at times to a general diathetic condition, but often wholly or in part to local trauma, may be a direct cause of villous hypertrophy, is illustrated by Case No. 7. The patient had a bony spur, evidently the direct result of an injury in football. This spur was surrounded by a villous hypertrophy. Removal of the spur and fringes certainly produced a complete cure twelve years after the original injury.

Clinical History.—The joints most frequently affected with these forms of arthritis are the knee, the shoulder, the ankle, and the hip. Of these the knee is most frequently involved, probably on account of its exposed position, its function in the weight bearing of the body, and the nature of its internal anatomy. Its exposed situation makes it liable to external trauma. Its function in the weight-bearing makes it liable to strain, and its internal mechanism is of a nature to be easily deranged. To a less degree these reasons apply to the other joints which have been mentioned. Depending upon the etiology of the arthritis in question, we find the type to be either monarticular or polyarticular. In cases following trauma, either direct or indirect, the lesion is monarticular, except where the etiological factor is bilateral in its distribution, such as pronation of the feet, relaxed knee-joint ligaments, etc.

Of course, where the hypertrophy of villi is due to toxic or inflammatory agents circulating in the blood, or to metabolic disturbances, affecting the general processes of the body, one would expect to find a polyarthritis, and this is usually the case. In looking over the history of these cases, it is noticeable that a considerable period of time has passed since the beginning of the trouble. This is particularly true of the traumatic cases. In these an interval of years rather than months or weeks is the customary rule. The explanation of this is probably that, until fibrous changes of considerable extent take place in these fringes, they do not simulate foreign bodies as they do subsequent to such fibrous change. In the early stage of passive congestion they are soft, and are readily disposed of in the act of moving the joint, and so do not give rise to symptoms other than swelling and a certain amount of discomfort and inconvenience upon first rising from a sitting position. Where some diathetic cause has been in operation, the fringe development has undoubtedly been so insidious that the patient cannot give a definite date to the onset of the joint symptoms. Here, then, we do not ordinarily find so long an interval between the onset of the trouble and the development of the joint fringes. In many cases there have been long intervals without symptoms referable to the joint. Such is usually the history where the primary cause was a trauma, giving rise to symptoms which were more or less temporary, with subsequent secondary traumata and lighting up of fresh symptoms. The symptomatology of this form of arthritis is often very indefinite, and

readily accounts for the lack of attention hitherto paid to the condition. There is sometimes an immediate onset of symptoms directly associated with the trauma, but more usually the symptoms which are due to the fringe are distinctly different in the mind of the patient from those which resulted from the trauma itself. The symptoms which are directly referable then to the presence of the fringe are these: a more or less frequently recurring synovitis which perhaps never wholly disappears, a sensation of pinching something between the component bones of the joint in the act of walking, at first occurring rarely, but becoming progressively a more or less constant symptom during the use of the joint. There is also a more or less local swelling of the membrane of the joint, usually of that portion which is below the patella and on either side of the patellar tendon. Pain is not ordinarily present when the patient is quiet. Sometimes this radiates down the leg almost to the ankle, and is usually of a sharp incisive character. The normal passive motion of the joint is not interfered with in flexion, and only occasionally is extension somewhat limited. When this occurs, it is usually due to the hypertrophy of those few villi which arise from the alar ligaments. Locking of the joint almost never occurs, as it does in the case of the dislocated cartilages. Although the patient is conscious of the presence of a soft body between the articular surfaces, he is usually able to flex or extend the joint at will. What has just been said regarding the symptomatology applies principally to the traumatic cases. Those which are due to a definite arthritis of toxic or diathetic origin differ in that the swelling is more symmetrical, is rarely or never confined to any one quarter of the joint, is accompanied much less frequently by a true effusion. Where the hypertrophy of the synovial membrane is general, the joint often appears to be filled with fluid. The patella seems to float, fluctuation is easily obtainable, and one is frequently surprised on opening the joint to find no excess of fluid. Under these circumstances one finds a very large mass of soft friable fringes, which protrude from the joint as soon as the capsule is opened. They look and feel in many cases like masses of small angle worms. In the cases dependent upon a general diathesis, as rheumatoid arthritis, contracture of the joints, spasm of the muscles, and other evidences of a true arthritis are usually found. Such symptoms do not commonly accompany the villous hypertrophy due to trauma. Measurements made will show an increase in the size of the affected joints which, in cases of traumatic origin, is usually either below the patella or above the patella only. In the other types the swelling is more diffuse, and the enlargement of the joint is noticeable throughout its entire extent. Pain on motion of the joint is not commonly noted, except in the cases where there is a definite arthritis of diathetic origin. Tenderness, localized over the fringes which are most readily palpable, is not uncommon, and is, in fact, usually present where the fringe is of any considerable size.

Differential Diagnosis.—In diagnosing this condition from others, few affections are to be considered. It cannot always be determined which of the several possible causes is responsible for the trouble. Usually, in the presence of any obvious joint disease, the explanation of existing fringes is not far to seek. Defects in the standing position of patients productive of joint strain at the knee should be looked for to explain symptoms such as have just been enumerated. The history of trauma should be inquired into. It has usually been sufficiently severe to attract attention. The general conditions occurring in weak and debilitated people which cause general and local muscular relaxation must also be borne in mind.

With these general observations it remains to consider what other conditions may cause these symptoms. Early synovial tuberculosis must be borne in mind. The patient's general condition in these cases is usually poor, as is also the case in rheumatoid arthritis. Tuberculosis, however, is monarticular, while rheumatoid arthritis is polyarticular in a large majority of cases. It is in these early tubercular cases that explorations are indicated after other methods of diagnosis have been exhausted.

The history of a gonorrheal affection accompanied by definite joint involvements is suggestive, but a simple history of a gonorrhœa at some more or less remote period is of no significance. It also should be borne in mind that the infective arthritic processes are possible excitants to rheumatoid changes, and that such a history, with rheumatoid appearances in the joints on gross examination, may indicate the subacute or chronic state of an infective process, or the early stage of a rheumatoid. A histological examination would probably clear up such a diagnosis.

A dislocated or partially dislocated semilunar cartilage may cause confusion, and it is sometimes impossible to establish the diagnosis. As a rule, there is not the locking of the joint in a partially extended position in the villous hypertrophy, as there so frequently is in the case of the cartilage; and the history of the dislocated cartilage is suggestive.

The difficulty arises where the cartilage was but slightly displaced, and was not accompanied by the customary trauma. In three cases in this series there were found hypertrophied synovial fringes, evidently due to the derangement of the joint in consequence of a partially detached cartilage which had not been definitely diagnosed (Nos. 15 and 26). An habitually recurring synovitis will frequently be found to be due to the existence of a fringe or fringes. Any simple synovitis that cannot be explained away on some reasonable ground should cause suspicion. In this series is one case of intermittent hydrops that was full of well-developed fringes. The hydrops was not materially benefited for any considerable length of time by the removal of the greater part of the fringes, so that this condition was probably simply a coincidence in the process. Intermittency in the accumulation of a synovitis would

lead one to be rather less sanguine as to the probable benefit of an arthrotomy in a villous arthritis thus complicated, and should be borne in mind in the differential diagnosis. The cases in which malignant disease, as sarcoma, finds its starting point in the villi of a joint are so rare that they must be regarded in the light of medical curiosities. Of monarticular affections osteo-arthritis not commonly causes a villous arthritis. This is usually accomplished by the trauma inflicted upon the joint by the osteo-arthritic spurs, which develop about the condyles and along the border of the patella. These irritate the synovial membrane, and cause the development of fringes in their neighborhood. These spurs can usually be recognized on palpation and almost always in the skiagram.

Treatment.—The treatment varies with the causation of the arthritis. Very many of the early cases, when caused by pronated or flat feet, where the condition in the knee-joint is that of a passive hyperemia due to the malposition, are promptly and permanently cured by resort to a proper support for the foot. This must be worn for a considerable time after the subsidence of the joint symptoms. Adhesive plaster strapping tightly applied over the front and sides of the knee to compress the synovial membrane and lessen the chance of its being crowded together and pinched by the action of the joint is helpful in relieving the symptoms and causing the fringes in some cases to shrink up. This is particularly true in the cases where the condition results from general loss of tone in the joint capsule or from faulty attitudes in standing and walking.

Where the villous hypertrophy is due to some diathesis, such treatment can be only palliative. In this last class of cases, however, the presence of the fringes is a source of irritation and injury to the joint, and here, as in all other cases, where strapping, bandaging, and correction of existing causative defects in the feet are not effective, operative measures should be taken. Prolonged fixation in plaster or other splints does not accomplish any permanent good, and long-continued conservative treatment is not to be recommended. The fact that the individual and not simply the joint is being treated should not be lost sight of, and general tonic treatment, massage, and exercises are indicated in the appropriate cases. In the osteo-arthritic cases, of course, any stirring up of the joints where spur formation is causing the villous hypertrophy is to be avoided. This applies to massage as well as to exercise, and here partial fixation in removable splints of leather is at times effective in quieting down the process. In such conditions as muscular and ligamentous laxity, some stages of the rheumatoid process, and the later or convalescent condition of the primarily infective cases, massage, exercise, and such measures are effective, and should be used. Here, also, local stimulating treatment by means of the alternate douche of hot and cold water is very beneficial. In the more acute stages of the rheumatoid fringes, hot fomentations and rubber dam worn next the skin at night give the patient more comfort, although the nature of their therapeutic value is uncertain. Dry heat at high temperatures is of little value.

The therapeutic treatment of the underlying condition in those cases, caused by rheumatoid and osteo-arthritis, is most unsatisfactory. The acute rheumatic remedies should be used very sparingly, and never continuously. The same is true of the sedatives and soporifics. Careful nursing, fixation of the affected joints during the acute stage, and general tonic treatment give the best results in the long run. Diet should be plain, but plentiful, and restricted only by the patient's capacity for digestion. These details are gone into here for two reasons. Many practitioners who have overlooked the fringes, because they have not examined their patient's joints, regard the symptoms arising from these conditions as rheumatic, and treat them accordingly The result is that the patient's general health becomes undermined, and if, perchance, the villous arthritis is rheumatoid in character, the worst consequences are to be expected. On the other hand, rational therapeutics has its place, and should be thoroughly followed.

Operative Treatment.—Failing in the relief of these conditions by the before-mentioned conservative measures, we have to consider the radical or operative procedures. These are to be undertaken when other treatment has been tried and failed, or when the condition is such as obviously could not be relieved by conservative methods. It offers the quickest and, in the long run, the most satisfactory results. It is not attended by any particular risk, and is rational in every way, especially in the cases of traumatic origin. Under the modern technique one thinks very little of the risks of infection. In this series of cases this has not occurred. With proper after-treatment there is no serious probability of a stiff joint, and restoration to normal motion and complete function is usually speedy and uncomplicated. There is practically no risk of weakening the joint because of the incision through its fibrous envelope, and there have been, so far as observed, no late sequelæ which tend to make one hesitate to operate. Where the villous arthritis is simply an evidence of a chronic general disease, the purpose of the operation differs from that in the cases in which the hypertrophied villi are the result of an injury or of some acute inflammatory process. To reach these fringes in the knee-joint, which is the joint most commonly explored, it has been found that a lateral incision about 5 to 6 cm. long over the inner aspect of the joint, extending a short distance below its lower border, affords an opportunity to investigate a considerable portion of the synovial membrane by direct inspection, and what cannot be seen can be explored by the finger. Familiarity with the "feel" of the fringes makes one quite expert in detecting them where they cannot be seen. If in this way it is demonstrable, or presumable even, that more fringes are situated on the outer side of the joint, a similar in-

cision is to be recommended over that aspect. In extreme cases, usually due to some diathesis, where there is extensive hypertrophy of the villi, we think that it is reasonable and proper to connect the two incisions which are usually made for exploratory purposes at their lower extremities, and in doing this to divide the patellar tendon close to its insertion into the lower border of the patella. On turning back the flap, the entire joint cavity is exposed, and the dissection of the villi is much more easily accomplished. The objection to this procedure is that the convalescence is necessarily prolonged because of the six weeks or more of immobilization of the knee required after division and suture of the patellar tendon. In several cases where joint tuberculosis has been diagnosed early excision of the parts of the synovial membrane attacked by the disease has been attempted, and this incision has given admirable opportunity for the removal of the disease, while the functional results have been extremely good. This, too, in spite of the fact that it was necessary, because of the nature of the disease, to protract the convalescent treatment very materially.

The removal of these villi is not ordinarily accompanied by any recurrence because the cicatrization of the denuded portion of the capsular surface causes the entire membrane to shrink, and scar tissue does not readily lend itself to villous hypertrophy. Thus, even in the diathetic cases, where the removal of the fringes is performed for the sake of freeing the joint from their irritative action, good results may be expected both locally and generally, through the improved function of the joint and the consequent influence which this improved function has upon the general condition of the patient.

Sometimes, on account of the vascularity of these fringes, some difficulty is experienced in checking the hemorrhage. It is impossible to ligate all the small bleeding vessels inside the joint, and the cauterizing effect of hot water is necessary. The only bad result attributable to our technic which has occurred in this series of cases was one in which the water supplied was so hot that the synovial membrane was scalded, and sloughing took place. This case is still under treatment, and we are trying to secure motion in the joint with apparently satisfactory results.

The capsule is closed with interrupted silk sutures, usually four or five in number, placed some distance apart, so as not to close too completely the synovial capsule. They also include the fibrous tissue. The skin incision is closed with either interrupted silkworm gut or subcutaneous continuous silver. In the majority of cases silkworm gut was used. In regard to dressings we have had experience both with fixation and with soft dressings alone. All our early cases were put up first in plaster-of-Paris dressings, which were kept on for at least a week.

In several recent cases immobilization was not practised, a soft dressing only being used. Joint effusion was not more marked.

(To be Continued.)

ECLAMPSIA HEMORRHAGICA. REPORT OF A CASE.

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A REPORT of this case may prove of some interest (1) Because of the uncertain etiology of the disease; (2) because of its severity; and (3) because of the rarity of this type of eclampsia (three cases only in the last 128 cases of eclampsia in this hospital).

Inasmuch as the etiological differences between eclampsia and nephritis with uremia remain still unsettled, it is as yet impossible to say whether or not the hemorrhages that occur in the two diseases are due to the same factors.

With reference to the essential pathological lesions of eclampsia, we know that there are to be found in the various organs of the body small areas of necrosis, due to thrombi in many of the smaller blood-vessels; but we do not know the true nature of the substance which, circulating in the blood, gives rise to these thrombi. The organs chiefly affected are the liver, kidneys and brain; of these, the liver seems to be the most constantly affected. In eclampsia hemorrhagica, likewise, the liver appears to be more often involved than any one other organ, as jaundice is to be found in the great bulk of the cases. The jaundice often manifesting itself before the appearance of the first hemorrhage. On autopsy, the liver presents to a marked degree, the appearance of acute yellow atrophy. This type is considered to be due to a greater toxicity of the blood, than the former, the hemorrhages indicating a greater impairment of the walls of the capillaries.

History.—The patient was a primipara, aged twenty-two years, 6½ months pregnant. She gave no previous renal history; her health had always been excellent, up to three days prior to her entering the hospital. During these three days she suffered from headache, scotomata and nausea.

Examination on Admission (September 22, 1902 at 1 P.M.).—(*a*) Subjective symptoms. Headache, scotomata, nausea; (*b*) objective symptoms. The patient appeared but moderately poisoned. There was slight edema of the ankles and feet. The heart and lungs were normal. The pulse was 98, of high tension, full and bounding. The abdomen showed the usual signs of a six to seven months' pregnancy. By vaginal examination, the cervix was found to be soft, fairly elongated, and to admit one finger throughout. The urinalysis report was acid; sp. gr. 1.026; albumin 30 per cent. by vol.; many casts of all varieties.

Course of the Disease.—Antepartum (September 22). Despite medical treatment, the patient had a very severe convulsion, about three hours after admission. Labor was, therefore, at once induced by means of a No. 1 Voorhees bag. This was expelled about two hours later, the patient being, in the meantime, kept under the influence of chloral and nitroglycerin. At 7 P.M. an ac-

couchement forcé was performed by Dr. Edwin B. Cragin. The fetus was non-viable.

Postpartum (September 22). The patient stood the operation well and seemed to improve considerably after the delivery. There was neither headache nor nausea. She slept quietly most of the night. When awake nourishment was well taken. Temperature 99.8° F.; pulse 84 with less tension; respiration 24.

(September 23). Severe frontal headache; moderate nausea and vomiting; restless but no convulsions. Nourishment fairly well taken. Lochia moderate, red; temperature 99° to 97.8° F.; pulse 80 to 100, of moderate tension; respiration 20 to 30; urinalysis, acid; sp. gr., 1.016; albumin, $^{2}/_{10}$ per cent. by weight; urea gr. 3 to ℥i; many hyaline and granular casts; total quantity, 50 ounces.

(September 24). Nauseated; vomited several times *dark brown fluid;* abdomen distended, painful and tender. Tenderness especially marked in the right hypochondrium. Moderate **jaundice;** edema of the face; *expectorated bright red blood* in the evening, and complained of a severe pharyngitis. Pharynx congested. Temperature, 98.4° F.; pulse, 110 to 120, of high tension; respiration, 20 to 28. Lochia moderate, dark red. Urinalysis, acid, 1.018; albumin, $^{6}/_{10}$ per cent. by weight; urea, gr. 2 to ℥i; moderate number of hyaline, granular and epithelial casts. Total quantity ℥ 24+.

(September 25). Frequent vomiting of *dark brown fluid;* abdomen somewhat less distended and tender; fair result from strong catharsis; jaundice the same: *many petechial spots on trunk and extremities;* pharynx very painful; submucous retropharyngeal hematoma. Some general improvement toward evening: temperature 98° to 100.2° F.; pulse, 130 to 120, irregular at times and of moderate tension; respiration, 36 to 30; lochia moderate, dark red. Urinalysis, acid, 1.026; albumin, $^{5}/_{10}$ per cent. by weight; urea, gr. 8 to ℥i; many hyaline and granular casts; total quantity, 61 ounces+.

(September 26). No headache; less irritable and restless; pharynx the same; *vomited dark brown fluid;* abdomen moderately distended and tender; no enlargement of the liver. Temperature, 100° to 98.4° F.; pulse 128 to 100, of low tension; respiration, 30 to 24; lochia, moderate, dark red; urinalysis, acid, 1.024; albumin, $^{1}/_{10}$ per cent. by weight; urea 7½ gr. to ℥i; casts of all varieties; total quantity, 69 ounces.

(September 27). General condition apparently improved; pharynx improved; no vomiting; *blood-stained fluid defecation.* Temperature, 98.4° to 100.2° F.; pulse, 118 to 114; respiration, 20; lochia, moderate, dark red. Urinalysis, acid, 1.026; albumin, $^{2}/_{10}$ per cent. by weight; urea, gr. 8 to ℥i; fewer casts; pus and epithelial cells; total quantity, 52 ounces.

(September 28). Nauseated, *vomited dark red blood* several times; severe epigastric pain; abdomen tender and somewhat distended; jaundice the same; no headache; restless. Temperature 100.6° to 101° F., pulse, 124 to 112; respiration, 28 to 38; lochia, moderate, dark red; urinalysis; acid, 1.024; albumin, $^{2}/_{10}$ per cent. by weight; urea, gr. 9 to ℥i; casts decreasing; total quantity, 53 ounces.

(September 29). Jaundice less; pharynx no longer painful; hematoma decreased in size; *tarry stools;* general improvement toward evening. Temperature, 100.4° to 100.6° F.; pulse, 120 to 110; respiration, 28. Lochia moderate, dark red. Urinalysis, alkaline, 1.022; albumin, $^{1}/_{10}$ per cent. by weight; urea, gr. 8½ to ℥i; total quantity, 56 ounces; very few casts.

(September 30). No headache; no restlessness; cheerful; no abdominal pain and only slight distention; vomited *small amount of blood;* stools normal. Lochia moderate, dark red, with odor. Temperature 100.8° to 101° F.; pulse, 112 to 118; respiration, 26 to 30; urinalysis, acid, 1.024; albumin, $^{2}/_{10}$ per cent. by weight; urea, gr. 9 to ℥i; total quantity, 25 ounces; only few casts.

(October 1). Marked general improvement; jaundice and petechial spots have almost disappeared; abdomen soft; nourishment well taken. Lochia moderate, yellow, with odor (slight). Temperature, 101° to 99° F.; pulse, 110 to 120; respiration, 28 to 32.

From this time on the patient made an uninterrupted recovery. There were no further hemorrhages. The albumin and casts gradually disappeared. The temperature, which was in part due to some slight uterine absorption, gradually dropped to the normal. The patient was discharged on October 19, in very fair condition.

To Summarize.—We find an eclamptic with but one convulsion, but with hemorrhage into the skin, pharynx, stomach, liver and intestine, accompanied with jaundice.

Brief Outline of the Treatment.—For the convulsive period; sedatives, arterial dilators, accouchement forcé. For the general toxemic condition, hydrotherapy and stimulation; for the hemorrhage, suprarenal extract; during convalescence, tonics.

WHO MAY BENEFIT BY ALTITUDE TREATMENT?*

BY J. N. HALL, M.D.,
OF DENVER, COLO.

My excuse for presenting this rather timeworn subject is that the physicians in the Rocky Mountain region still see a considerable number of patients sent from other localities who might better have remained at home. In my twenty years' experience here, I have noted continually greater care in the selection of cases to be sent here by physicians in the East. I write this with the hope of doing my small share to bring about a further improvement.

It is not only a lack of trained judgment upon the part of a physician which may lead to the

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sending of unsuitable cases to the West. The very great majority of the patients we see have had the benefit of careful examination and discriminating estimate of their condition by excellent practitioners. But a few have been advised, not, to be sure, by men of the character of our own membership, to go to the Rocky Mountains, without the trouble even of stripping the chest for examination. I have seen cases of heart disease, asthma, and chronic bronchitis, sent to me with a diagnosis of tuberculosis. These are the patients who say: "Why, Dr. Blank did not ask me to remove even my coat when he examined me." Such carelessness is criminal.

Certain patients with advanced lung trouble must have been sent with a certain knowledge that they could not live a month. Five days ago I saw such a one who died on his fifth day in Colorado who had not even been told that he had tuberculosis. My statement to his sister that he had but a few days to live came to her like a thunderbolt. She stated that they had always feared that he might contract tuberculosis, but their physician had told them that he had only a slight bronchial trouble.

My own explanation of such a mistake, and it is far too common, is as follows: The patient complains of a cough, and receives a cough mixture without any but the most perfunctory examination of the lungs. As the cough progresses a relative asks if it is possible that the case is one of phthisis. The doctor assures him that "it is only a bronchitis," and "that it will be better when the weather becomes settled." Meanwhile, the patient, who ought to be at rest and upon a suitable diet in a proper location, continues, as did the one just mentioned, to work in an ill-ventilated newspaper office. He finally becomes so ill that a change of diagnosis must be made or the patient sent away. I fear the latter course is occasionally the easier for this type of physician. I have repeatedly known their poor victims to be so ill upon arrival at the station as to preclude the possibility of sending them home alive. Proper examination, honesty and the most ordinary judgment would prevent these errors.

Of the conditions suitable for altitude treatment in this region, pulmonary tuberculosis is the most important, as all must recognize. The percentage of recovery depends more upon one factor than upon all others combined, namely, the stage of the disease. A large percentage of physicians recover from tuberculosis here. It is accounted for solely by the fact that the doctor with a beginning cough falls early into expert hands, and is sent away with the first suspicion of the true nature of his disease. If all patients with cough were sent to the mountains upon the appearance of a few crackles in one apex, without waiting for dulness to appear, and even before a positively bacillary examination was obtained, there would be more well men and fewer diagnoses of consumption. I know a score of physicians in robust health who have started West upon a week's notice and recovered. Had they waited the advent of well-marked dulness, I should have known fewer of them. The urgent need in the treatment of tuberculosis of the lungs is not, in our present age, cod liver oil, not creosote, nor yet a curative serum, but early diagnosis. Given this, without even waiting for too absolute proof of its correctness, if the first bacteriological examination be not positive, and we may expect 90 per cent. of recoveries. As infiltration is added to the catarrhal process the diagnosis is easier and surer, but the prognosis is proportionally less favorable. After considerable dulness and even excavation occur at one apex, there is a fighting chance of arrest, and a good chance of delayed progress. Involvement of both lungs, except it be purely catarrhal, generally precludes hope of complete arrest.

The predominance of the fibroid element in the tuberculous process is certainly favorable as to slowness of advance, but cases with this characteristic rarely attain the complete arrest so often seen in the early catarrhal cases. I see many of these cases following pleurisy with effusion which go on for many years, always coughing and expectorating a little, with very gradual loss of weight, with bronchiectasis, and perhaps, finally, apical cavity formation. These cases have many years of useful life here, beyond what they would have enjoyed in a less favorable climate.

There is one variety of phthisis little dwelt upon in the text-books which should be mentioned, for I believe the cases last much longer here than in lower lying regions. I refer to the type seen in certain young adults with moderate loss of weight, practically normal temperature, with little or possibly no appreciable dulness, but with constant cough, considerable expectoration containing abundant bacilli, great dyspnea, and upon examination, lungs bristling with fine moist rales. I have in mind three such cases, each of three to ten years' duration, with such slow downward progress that it can scarcely be noticed. I have never observed this type in New England, and doubt if it could exist there for such lengths of time. The prognosis is so much better as to time than one would at first believe that they should be carefully separated from the ordinary type, and sent to the high dry regions. The dyspnea may be severe for a time, owing to the obstruction of so many bronchioles, but the disease process does not seem here to extend to the lung tissue as one would anticipate.

Persons with a bad family history of tuberculosis may well consider the advantage of moving permanently to a high, dry region before the advent of signs of the dreaded disease. In cases where the lung does not entirely re-expand after pleurisy with effusion, two reasons should counsel us to send them to a considerable altitude. Firstly, the rarer atmosphere favors the expansion of the crippled lung; and secondly, the development of tuberculosis is thereby directly rendered less likely. In addition, we have the general antituberculous effect of the climate, even

though the lung cannot re-expand because of adhesions.

I think there is no question that glandular tuberculosis progresses more favorably here than at sea-level. This opinion is certainly held by Dr. Leonard Freeman and other surgeons of Colorado who have had experience both here and in large cities of the East.

Many cases of asthma are permanently relieved in this climate. The less the association with asthma, or its twin evils, chronic bronchitis and emphysema, the greater the chance of such permanent relief. If, however, the emphysema be not extreme, or associated with weakness of the right heart, such cases may be safely regarded as favorable for altitude treatment. The well-known purity of atmosphere of higher regions does much more good than the decreased density of the air does harm, the relief of the spasmodic element and of the bronchitis being the striking features in bringing about the improvement.

Almost constantly in those who have lived for many years in our mountains one may observe an increased chest development virtually amounting to moderate emphysema. This is a compensatory process, because of the need of great lung surface. Its origin, however, should teach us that the improvement in asthma and chronic bronchitis in this region is in spite, if not on account, of the emphysema. On the plains of eastern Colorado the lesser altitude is more favorable for cases with decided emphysematous changes.

The complication of tuberculosis of the lungs by organic heart disease often causes difficulty in deciding where to send a patient. I think we shall generally be right if we respect most the predominant condition. If any material dyspnea be caused by the heart trouble, only an incipient tuberculosis would probably be susceptible of improvement in a high altitude.

I do not observe any especial difference in the behavior of valvular heart disease or myocardial affections at Denver from that at sea-level if compensation be good. If it be on the point of failing it is a risky experiment to send the patient to any great elevation. In such a patient, scarcely any condition is susceptible to improvement by altitude treatment.

Of late years a host of the victims of malaria from the South and Southwest, as well as those returning from our tropical possessions, seek recuperation in the Rocky Mountain region.

The anemia and enlarged spleen are commonly ameliorated rapidly, and the absence of further infection is of great advantage. In those recently from the South we occasionally see outbreaks of ague, and I have seen, since the Spanish war, the only two pernicious malarial paroxysms that I have ever heard of in Colorado, both in newcomers. I know of no condition more certain to be benefited by the climate of the Rocky Mountains than the one we mention. I have seen many soldiers returned from Cuba and the Philippines who had suffered from the graver forms of ague, and practically all recovered completely, though often with severe relapse. This is also, so far as I know, the general opinion of the medical officers of the army.

The well-recognized increase in the number of red cells and the percentage of hemoglobin in certain anemias, upon removal to higher altitudes, is sufficient ground for the belief that the secondary anemias at least do rather better there than elsewhere. I know of no such influence in pernicious anemia. It certainly occasionally develops in those who have long lived in Colorado. I have recently seen a case in a man who has resided there for more than thirty years.

Certain cases of hay fever do wonderfully well with us, but some atrocious cases develop in the farming regions of Colorado, especially, perhaps, from the cottonwood tree and from alfalfa.

Those exhausted by prolonged summer heat find in the cool bracing nights of the mountains a tonic which cannot be obtained at home.

I know of no especial influence upon most other diseases aside from those of the nose, throat and ear, which others are more competent to discuss.

MEDICAL PROGRESS.

MEDICINE.

Syringal Hemorrhage into the Spinal Cord.—The etiology and the symptoms of this interesting but happily rare condition, is presented by Sir William Gowers (Lancet, Oct. 10, 1903), and several of his most interesting cases cited. Perhaps the most characteristic sign presented is the pain, which is described as being so severe that it makes the patient shriek with agony, the legs feeling as if they were being broken across. The bulk of the pain, however, is locally over the spine, the referred pain being entirely secondary as regards degree. Such pain as this does not occur in simple myelitis. If the blood escapes into a cavity of considerable vertical extent, there is not much erosion of the cord at the seat of the hemorrhage until the cavity is filled. It is probable that the cavities into which these hemorrhages take place, may be in many cases regarded as congenital. Some authorities, however, differ from this. It is easy to understand how hemorrhage may readily occur into these preexisting cavities. They are irregular in position and in size, and therefore in their relation to the vessels. The adjacent gliomatous tissue which surrounds them seems to be readily broken down by the fluid they contain. Adjacent vessels are imperfectly supported and may easily give way. Furthermore this gliomatous tissue is extremely vascular and may be a source for the hemorrhage, without any reference to the larger vessels. The symptoms, therefore, will vary rather directly as the congenital spaces of the cord are greater or smaller and are surrounded by a more or less vascular area. Inasmuch as these spaces are distributed along the posterior cornua, it must be remembered that if distended by blood, they may compress the lateral columns. And if it extends forward to the central region, it may compress the anterior horn. To differentiate the condition from a cerebral lesion, it is important to note that the latter never causes complete paralysis of the arm without any affection of the face or leg. The sternomastoid is weakened on the side opposite to the paralyzed arm, not on the same side. The most important therapeutic point is to give absolute rest in every

case of sudden spinal palsy. This is especially important when pain suggests a hemorrhagic cause. Every effort should be made to reduce the blood pressure in the spinal cord. To this end the spine should not be the lowest part. Therefore, the posture of the patient is of great importance. In all cases where there has been an escape of blood, the influence of gravitation for good or evil is too often overlooked. Hence, in the case under consideration, the prone position should be maintained, or, if possible, the patient should be placed in a sitting position. Posture is of the utmost importance in the treatment of all acute affections of the spinal cord.

Epidemic Pneumonia.—An epidemic of lobar pneumonia is described by F. SPAET (Münch. med. Woch., Sept. 29 and Oct. 6, 1903), which was peculiar in that it occurred in a small country town where the hygienic conditions were excellent. Within two months 13.9 per cent. of the inhabitants had been affected. The course and physical signs were typical and in general severe, yet fatal cases and complications were rare. Epidemics of pneumonia are not common and generally occur where many people are herded together or else are secondary to influenza and then more irregular in type and marked by severe pains in the limbs and vomiting. One is forced to conclude that genuine lobar pneumonia is occasionally a contagious disease, though the conditions which enable it to spread are still unknown.

Occurrence of Bacteriuria.—The occurrence of idiopathic inflammation of the bladder in children is certainly rare when one considers that the prominent symptoms—tenesmus with discharge of small amounts of urine free from blood and pus—are rarely overlooked. D. CNOPF (Münch. med. Woch., Oct. 6, 1903) points out that autoinfection plays a prominent part, for the majority of patients were girls suffering from enterocolitis, where contamination of the genitals was hardly avoidable and the short urethra facilitated infection of the urinary passages. With boys, the explanation is somewhat more difficult, but it has been shown that bacilli can readily wander through lesions of the rectum into the bladder. Infection by way of the blood is not yet absolutely proven, though colon bacilli have been found in the circulating blood of infants suffering from enteritis. A bacteriological examination of the bladder-contents in such cases may show the presence of colon bacilli, even if there are no vesical symptoms. There must be some concomitant weakness of the bladder-wall induced by cooling off of the body, retention of urine or general intoxication, especially if the kidneys are much diseased. The symptoms may be very mild or very severe; in the latter case there is high fever, chilliness, nausea and constipation. The abdomen is exceedingly tender and burning, saturated urine is constantly voided in small amounts. On examination it contains albumin, mucus, pus, epithelium and even red blood cells. The colon bacillus, exceptionally the *Bacterium lactis aerogenes* or the *Diplococcus pneumoniæ* are found in large numbers. The condition may run its course in one to two weeks, but obstinate recurrences may follow. Ofttimes an obscure temperature-curve is due to this bacteriuria. Serious complications, such as urethritis, pyelitis, nephritis or uremia hardly ever occur in children, but treatment should be prompt and energetic. Urotropin internally is harmless in children and efficient, though it must often be given for weeks. Bladder irrigations with dilute antiseptics are of course in place.

Acute Leucemia.—The subject of this rather extensive report, by A. M. YANOUSHKEVICH (Prakt. Vrach, Aug. 23 and 30, and Sept. 13, 1903) began to complain of severe pain in the throat, general malaise and loss of appetite; the pain passed off in a few days, but the weakness increased rapidly compelling the patient to give up his work. A week before admission he began to suffer from cough, dizziness, sweating and slight fever; in a few days thereafter there appeared a swelling under the upper lip, and an offensive odor from the mouth. There were no ecchymoses or petechiæ anywhere on the skin; the various glands but slightly increased in size. There were three ulcers on the reddened swollen gums. Auscultation of the arteries gives a distinct anemic murmur. The spleen is enlarged. Microscopic examination of the blood shows a marked increase in the white blood corpuscles, while the red corpuscles are of various sizes; there are also a few poikilocytes. The first count gave 52,500 white and 1,540,000 red corpuscles, and 4.86 gr. hemoglobin (Glan's method). The urine contained a trace of albumin; otherwise normal. The temperature kept gradually increasing; there occurred convulsions in the right foot, followed by convulsive twitchings of the head which lasted for two minutes. The ulcers meanwhile coalesced, forming a large, offensive, painful wound; odor from the mouth intolerable. The glands began to swell, the pulse became weaker, 156, respiration 38, condition of patient, comatose or delirious; complains of blindness, general hyperesthesia; the last count of blood corpuscles showed 165,000 white and 740,000 red (1:4.5), hemoglobin 2.1 gr. Patient died on the tenth day of his admission to the hospital with symptoms of severe dyspnea and cardiac weakness. The autopsy fully verified the antemortem diagnosis of leucemia; the most important alterations were as follows: Gangrene on the inner surface of the entire upper lip and part of the gums; fatty degeneration of the cardiac muscle; enlargement of various glands with hemorrhages into their tissues; lymphomata in many of the organs; enlargement of the spleen to almost double its normal size. Enlargement of the intestinal follicles as well as of Peyer's patches. Alterations in the bone marrow of the sternum and ribs, and so on. It is interesting to note in connection with this case the absence of a very important symptom of such a condition, namely hemorrhagic diathesis; the author is inclined to ascribe this absence either to some special individual characteristic of the patient's system, or to the character of the poison which in this case failed to exert any deleterious effect on the endothelium of the blood vessels.

Question of Meat Diet in Nephritis.—Some clinicians forbid meat in nephritis since this is rich in proteid and is apt to increase the percentage of albumin in the urine. T. R. OFFER (Centralbl. f. d. g. Therap., Sept. and Oct., 1903) shows, however, that this is based upon an erroneous calculation and that with a strict milk diet more proteid is often ingested than where a moderate amount of meat is allowed. Restriction of dark meat is still advocated by many, owing to the larger amounts of extractive matter present, which is supposed to irritate the kidneys. According to the writer's accurate chemical analyses however, the differences are so slight as to be of no practical value. When meat is roasted, a certain amount of extractive matter passes over into the sauce and this is more pronounced in the case of dark meat, so that beef-steak would really be more permissible than roast veal.

Condition of the Stomach in Tuberculosis.—According to A. ROBIN and E. DU PASQUIER (Bull. Gen. de Therap., Sept. 30, 1903), the stomach suffers in every stage of tuberculosis. In the earliest period one encounters hyperacidity most often. The patients will complain of pyrosis, acid regurgitations and a number of disagreeable sensations during digestion or five or six hours later. The symptoms are intermittent and there are even times when they will boast of an ex-

cellent stomach. The appetite is capricious, the tongue appears normal and constipation is not rare. Vomiting when present, is rather characteristic, in that it is not accompanied by nausea or pain. The hydrochloric acid rarely exceeds one gram to the liter and sometimes a variable amount of lactic and butyric acid is present. During the second stage, when the tubercles undergo softening the gastric juice is found normal or of diminished acidity. Finally, in the stage of cavity-formation, the secretion will be entirely insufficient and a chronic gastritis with mammilated mucous membrane and interstitial periglandular inflammation will supervene. Anorexia is present, digestion is accompanied by feelings of oppression and foul-smelling regurgitations and vomiting are common and preceded by nausea and pain. The stomach contents contain only a trace of free acid, pepsin is much diminished, and rennin entirely absent. Diarrhea often accompanies the gastritis and hastens the end. The initial hypersecretion is explained by the authors by an irritation of the vagi, the final hyposecretion by the cachexia.

Tuberculin Test in Consumption.—It is often impossible to detect by means of physical examination, if a patient is suffering from incipient tuberculosis or if a formerly active process has passed into the latent stage. For such cases, E. Fischer (Correspbl. f. Schw. Aerzte, Oct. 1, 1903) finds the tuberculin test invaluable. A patient may feel well and gain in weight and the physical signs may be insignificant, so that the physician is inclined to pronounce the case cured. Yet a rise of temperature may follow an injection of tuberculin which indicates that another course of hetol treatment is in place. A cure is thus established on an exact scientific basis and is no longer guesswork. In one apparently advanced case, no reaction followed, so that the patient, who was hitherto regarded as a hopeless consumptive, could be definitely cured of his lung abscess.

Stomach Contents in Various Diseases.—Votruba and Mixa (Bull. Gen. de Therap., Oct. 8, 1903) have systematically examined the stomach contents in a large number of diseases with the following results: In tuberculosis there is hyperchlorhydria and hyperpepsia at first, later hypochlorhydria with varying amounts of pepsin and rennin. Nephritis is generally marked by hypochlorhydria with normal amounts of pepsin and rennin. Hypochlorhydria also goes with osteomalacia. No constant figures were obtained in diabetes mellitus, chlorosis, neurasthenia, or hysteria. With cancer and ulcer of the stomach, the usual characteristics were found. No parallelism between acid, pepsin and rennin could be found in the various diseases studied. In hypochlorhydria, hydrochloric acid is indicated, but where there is an excess of acid, calcined magnesia has a much more lasting effect than bicarbonate of soda.

The Blood in Congenital Heart Disease.—An interesting and fairly constant symptom accompanying the cyanosis of congenital heart lesions is a marked increase in the number of red blood cells. In a series of cases observed by E. Fromherz (Münch. med. Woch., Oct. 6, 1903) figures as high as 9,800,000 were obtained. In one case where the autopsy subsequently revealed pulmonary stenosis and open foramen ovale, a peculiar attack was noticed several months before death. The patient suddenly became almost completely black in the face and suffered from extreme dyspepsia, while the heart action was heaving and the pulse strong and hardly increased in frequency. Probably a dilatation of the right auricle had taken place and most of the blood had passed directly into the left auricle and from there into the general circulation, instead of right ventricle and pulmonary circulation. The increase of red cells is to be looked upon as a compensating change. Since the amount of blood flowing through the lungs is less than normal each given amount of blood must present a larger oxygen-absorbing surface to meet the demands of the body. Despite this, cyanosis is common since the number of red cells in each cubic centimeter has its limits and can rarely exceed 8,872,500, if the cells are of normal size.

Serum Therapy of Scarlet Fever.—If it is taken for granted that all streptococci are closely related, it would seem that all antistreptococci sera ought to be able to exert a specific influence on scarlet fever cases. In a discussion of this question, H. Schiller (Medicine, Oct., 1903) points out that experiments have shown that sera which have been produced with virulent and unchanged streptococci agglutinate very promptly all the forms of streptococci, and this variety of sera should therefore produce the best results in treating scarlatina. Sera of this type are those of Moser and Tavel. The author reports two cases in which the prognosis was very bad. They were combined with sepsis and the usual measures including the use of unguentum Credé did not produce any improvement. Resort was then had to the ordinary antistrepticoccus serum sold in the open market. This is prepared after the manner of that of Marmorek, and was used because neither of the other types could be obtained. From 15 to 20 c.c. of the serum was injected in each case, on two occasions from three to five days apart. The improvement was almost immediate, the general condition improved, temperature fell, pulse grew stronger, and the glandular swellings became reduced. Relapses had occurred in each case before the second injection of serum, due probably to a renewed invasion of the system by streptococci originating in the glands. The reaction, however, was prompt.

What Drugs Can One Use Against Diabetes?—Kaufman in Gazz. degli osped., (Oct. 6, 1903) makes a systematic study of various methods of treatment of diabetes. In 11 observations, opium or its alkaloids were used, six times successfully, three times unsuccessfully, two with doubtful results. Bromides are useful where glycosuria is combined with neurasthenia. Bichloride of mercury diminished the sugar in many cases, but was without result in one-third of the patients. Carbolic acid was without effect in 11 cases of grave glycosuria; in five cases there were some results, in two cases the result was favorable. Salicylates had no harmful results, except in diminishing the appetite. Salol worked better. Antipyrene administered to seven diabetics had no effect except in disordering the gastro-intestinal tract. Piperazine increased the glycosuria in one case. Jumbul, in two cases, produced a distinct improvement, in three the effect was slight, and in two was absolutely negative. The author concludes that opium, salicylates and jumbul are the only drugs that modify glycosuria; he advises opium in severe cases with serious complications, and salicylates in milder cases or after a course of opium treatment.

Transmission of Tuberculosis.—During recent years it has been the general belief that tuberculosis is acquired usually by the inhalation of the tubercle bacilli into the respiratory tract. That this is a frequent method of infection must be acknowledged by all, but the fact that infected food is the means of communication in a large number of instances, even when the lesions of the disease appear first and principally in the respiratory tract, is being urged by a great many authorities. J. O. Cobb (N. Y. Med. Jour., Oct. 3, 1903) cites the experiments of Nicholas and Descas, who fed fasting dogs on tuberculous sputum and in several instances were able to detect tubercle bacilli in the thoracic duct three hours after such ingestion, even when no lesion could subsequently be detected in the intestinal tract.

Even in the intraperitoneal inoculation of guinea-pigs it is frequently noted that the lungs manifest extensive lesions when there has been very little involvement elsewhere. It is not unreasonable to suppose that the tubercle bacilli when free in the blood locate by preference in the lung tissue just as other germs which seem to have a predilection for particular tissues of the body. The probability is that cows almost always acquire the disease through their food, and it is a simple matter to understand how this is possible. They frequently lick the same lumps of salt and drink from the same troughs or even eat from the same bins. By coughing they probably infect the food or receptacles before them. The infection of swine by means of the gastro-intestinal tract as the usual manner is undisputed. It is more difficult to prove the mode of infection in man, but it is contended that the gastro-intestinal tract is a very frequent avenue of entrance. The food and water used by a family, in which there are one or more careless tuberculous patients, can be very easily contaminated. Flies undoubtedly serve as carriers of tubercle bacilli, for sputum is always especially attractive to them, and the presence of bacilli has often been demonstrated upon their proboscl.

Quincke's Disease.—This disease, first studied by Quincke in 1882, is an angioneurotic edema, according to Bastogi (Riv. critica di Clin. Med., No. 32), acute, idiopathic, but circumscribed, the swellings are from 2 to 10 cm. in diameter. It seldom affects the mucous membranes, is temporary, generally soft, elastic, white or red, indolent, accompanied by a sensation of tension. It returns frequently, with evident periodicity, and is sometimes hereditary. It usually involves the superficial layers of the skin, but sometimes invades the subcutaneous tissue. It attacks the extremities, the lids, the labia, and, less frequently, the trunk. It has even been seen in the retrobulbar cellular tissue causing exophthalmos. The symptoms vary according to the location of the edema. In cases of edema of the glottis or larynx it can become fatal. The most common cause, when it can be determined, is refrigeration or traumatism. Emotional shock, deficient nutrition also produce it. The cause is a local change in the minute blood vessels, and their vasomotor nerves causing a slowing of the circulation of the blood, from some local toxemia probably, capable of provoking acute saturation of the tissues with serum. An irritation of the vasodilators rather than a paralysis of the vasoconstrictors is probable. This irritation increases the serous secretion by the change in the blood and in the walls of the blood vessels. Some cases present a symmetrical involvement of different areas, suggesting a central origin. These cases are accompanied often by vomiting. Acute angioneurotic edema is to be distinguished from edemas of mechanical origin, from inflammatory, nephritic, or myxedematous origin; also from edema occurring in cases of hemiplegia, tabes and hysteria. The various cases of angioneurotic edema reported in literature have been associated with grip, articular rheumatism, gastro-intestinal disorder, uricacidemia, or gout. Other cases seem idiopathic, and not associated with any other diathesis or condition.

Syphilis and Suicide.—Four classes are mentioned (Alfred Fournier, La Presse Med., May 20, 1903): (1) Cases where the suicide is the result of a mental trouble arising directly from the syphilis; (2) cases where suicide is the result of despair of the patient, who has suffered from external syphilitic symptoms, which are of a serious nature, or so considered by him; (3) cases associated with the original announcement to the patient that he is syphilitic; (4) cases depending on the social situation where syphilis has definite relations with marriage, or social standing. The first group includes those cases, the most numerous of all, where a mental trouble is directly the result of the syphilis, that is to say, a syphilitic encephalitis, a gumma of the brain, a general paralysis of the insane, referable to the infection. In certain forms of syphilitic encephalitis suicide is a symptom, and at a very early period of the disease. It appears so suddenly that it overpowers the patient who has been in an absolutely quiet condition. It may appear after many years, or in cases of hereditary syphilis. In the second class, where shame of suffering a venereal disease or a disfiguring ulceration of the face, the writer advises all physicians to appreciate the special mental and moral attitude of his patients, so as not to be taken unaware by suicide from this cause. In the third case, where suicide follows the first notification of syphilis, the fault lies in an abrupt, tactless announcement on the part of the physician, to patients who are syphilophobiacs.

Excretion of Ammonia in the Urine.—The amount of ammonia excreted in the urine remains the same no matter whether much or little proteid is injected or if meat is allowed or not. A. Schittenhelm (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 5 and 6), however, finds that with a fatty diet, the amount of ammonia at once increases owing to an overloading of the organism with fatty acids and their decomposition products. Where there is no free hydrochloric acid in the stomach and the total acidity of the test-meal is low the amount of ammonia obtained from the urine is low also, and conversely, so that the gastric secretion seems to have a marked influence. In chronic degenerative disease of the liver there is also a general acidification, with greater excretion of ammonia. If now fat is given the figures obtained will be higher than in the normal organism.

Behavior of Leucocytes in Various Diseases.—The white cells were carefully counted in a number of diseases by P. Rekzeh (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 3 and 4), in the hope of finding constant relations of diagnostic value. The results were briefly: (1) In mercurial dermatitis, a slight increase of leucocytes by 1 or 2,000, the large lymphocytes and transitional forms occasionally increased, mononuclear elements normal, polynuclear leucocytes diminished and eosinophiles somewhat more abundant. These changes were all independent of the syphilis present. In excised pieces of altered skin eosinophiles were also abundant; they were more numerous in capillary blood, taking from the neighborhood of the eruption, than from venous blood. Their presence is accounted for by the irritation caused by the breaking down of epithelial cells. (2) Scarlet fever. Here an eosinophile increase independent of the general leucocytosis was present, which reached its acme when the eruption began to fade. The percentages varied between 1 and 12.5 in one series (children), between zero and 23 in another (adults); the average number was 8 per cent. at the height of the disease. (3) Measles was characterized by an absence of leucocytosis (4,200 to 4,800, with eosinophiles between zero and 5 per cent. in children and zero and 4 per cent. in adults. The greatest percentage was here also obtained during the fading of the eruption. (4) Erysipelas gives rise to a marked polynuclear leucocytosis with diminished lymphocytes, and complete absence of eosinophiles. (5) Diphtheria. A leucocytosis proportionate to the severity of the disease and due chiefly to increase of lymphocytes. In four cases myelocytes were found and in one a relative lymphocytosis was present four days before the onset of clinical symptoms. The eosinophiles were normal or diminished. (6) Leucemia. The eosinophiles varied here between 1 and 14.6 per cent., and were most abundant in the relatively benign and myelogenous types. (7) Pernicious Anemia. Here also an eosinophile leucocytosis is present only in the milder

cases, but high figures were never obtained (1 to 2.5 per cent.)

Diagnosis of Bone Metastases from the Blood.—The article of O. Kurpjuweit (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 5 and 6) forms an interesting contribution to blood-pathology. This author finds that if besides the indications of a severe anemia, a large number of myelocytes (4 to 17 per cent.) are present in the blood, even if the clinical picture is obscure, the diagnosis of malignant tumor with metastases in the bone may be made without hesitation. Myelocytes occur in the blood in small numbers (fractions of a per cent.) in diphtheria, pneumonia, and malignant tumors without metastases. They are found more abundantly in leucemia, but here poikilocytosis is absent, mast cells are increased and eosinophile cells are more common. Clinically leucemia and malignant secondary tumors in the bone may be very similar; in both there is advanced anemia, tenderness of the bones, hemorrhagic diathesis and an irregular fever. The absence of enlarged spleen and lymph-nodes will, however, speak against a leucemia. In pernicious anemia, myelocytes will never reach such high figures. The myelocytes in malignant tumors appear only when secondary nodes form in the marrow; they are a manifestation of disturbed hematopoietic function.

PHYSIOLOGY.

Contributions to the Physiology of the Kidneys and of Diuretics.—The diuretics are divided into three groups by W. v. Sobieranski (Pflüger's Archiv, Aug. 8, 1903). To the first belong caffeine and similar bodies, which principally lessen the resorptive powers of the contorted tubules and thereby bring about diuresis. In the second group are to be placed all the salts, which increase chiefly the filtration and osmotic properties in the glomeruli. The third class includes all those bodies, which in their effect, make them intermediate between the two other classes. These bodies are urea and kindred substances. In studying the histological effects of saline diuretics on the kidney, the author found a pronounced dilatation of masses of tortuous uriniferous tubules. Most characteristic was the appearance of a brush-like border in all those tubules of the above type with low epithelium. This is so typical that it undoubtedly is connected with the phenomenon of saline diuresis, and is to be regarded as a manifestation of the hygroscopic properties of the salts. The latter in the blood prepare the way for diuresis, which accordingly occurs in the glomeruli. As soon as the urine secreted in the Malpighian bodies reaches a certain concentration of salt, there occurs in the contorted tubules a shrinkage of epithelium, as the result of the hygroscopic action of the salt; hence the brush-like border of the epithelium. As soon as the saline concentration of the blood and urine sinks, the capacity of the epithelium to swell to its normal size has the upper hand. Thus, saline diuresis manifests itself in the kidneys by the play of two forces, the one determining the greater filtration of the urinary constituents in the glomerulus, the other consisting in the effect of concentrated saline solutions upon the uriniferous tubules. There results an osmotic struggle between the resorptive capacities of the epithelium of the contorted tubules and the hygroscopic properties of the salts. Caffeine hardly changes the form of the epithelium of the contorted tubules but increases their resorptive power. Urea lessens this power but exerts, when administered in large amounts, the same effect as salines.

The Digestibility of Vegetables.—An experimental contribution by A. P. Bryant and R. D. Milner (Am. Jour. Physiol., Oct. 1, 1903) indicates that so far as sources of protein or fat are concerned, the vegetables studied (potatoes, cabbage, apple sauce and green corn) may be considered as of little value. They do, however, contain carbohydrates, which the results of these and other experiments indicate to be quite well digested and absorbed; and they may, therefore, be considered as of value as sources of energy, a large proportion of which appears to be available to the body. The chief value of many vegetables, however, is perhaps aside from the nutrients or energy they furnish; they add a pleasing variety and palatability to the diet, supply organic acids and mineral salts, and give the food a bulkiness that seems to be of importance in its mechanical action in maintaining a healthy activity of the alimentary tract. Perhaps the result of these conditions is a favorable influence upon the digestion of other food eaten with the vegetable; at least such an effect was suggested by the results of some of the experiments.

Gastric and Intestinal Peristalsis.—A new experimental method of studying the peristaltic waves of stomach and intestines under different conditions, has been employed by F. Lommel (Münch. med. Woch., Sept. 22, 1903). Small dogs were fixed in the right lateral position and fed with milk or finely divided meat to which 15 per cent. bismuth subnitrate had been added and then Roentgen rays allowed to pass through the body from the right side below to the left side above. After two to six minutes distinct rhythmical waves began to appear at the large curvature. These rapidly became more distinct and extended to the pylorus, which became distinctly tube-shaped after nine to fifteen minutes. Ten distinct waves required about two minutes. The application of warmth did not increase the number or rapidity of the waves and likewise cold was of little influence. The addition of certain substances, such as somatose seemed to stimulate peristalsis. The influence of psychical conditions was very apparent. In restless animals or animals suffering pain during the experiment, no gastric movements were noticed for as long as two to three hours. Concerning the intestines, there is no question that antiperistaltic waves occur under normal conditions. Both stomach and intestines contract rhythmically and distinct periods of rest follow each larger wave.

The Differential Recognition of Human Blood from that of Other Animals.—Bordet has some time ago established the following fact: If the red blood corpuscles of a certain animal be introduced hypodermatically into the blood of another animal there will be formed in the serum of the latter substances possessing certain properties toward the blood of the first animal, known as agglutination, and hemolysis. This action is specific, inasmuch as the serum shows its effect only toward that animal and is inert as regards any other. The same is proved to be the case with other fluids of the body, such as milk. Several investigators went further in these experiments and established what is known as the biological method of differentiating the blood of man from that of other animals. P. N. Diatroptoff (Roussky Vrach, Sept. 13, 1903) resorted to this method in the rather notorious case of the murder of a boy said to have been committed for ritual purposes and which served as the immediate cause of the Kishineff massacre. The question to be decided (besides controverting the obstinate rumors fostered by certain people) was as to whether the blood found on the boy's clothing was human or not. To obtain the requisite serum, blood serum from man was injected into a rabbit. The human blood was collected from the mother's end of a cut placental cord into a sterilized tube, and then subjected to centrifugal action. During a period of twelve to sixteen days each rabbit received between 60 and 80 c.cm. of human serum. Six

days after the last injection the blood obtained from an experimented rabbit was compared with the blood of a healthy rabbit. Two drops of human blood in 5 c.cm. of a physiological salt solution when mixed with ¼ c.cm. of the serum from the experimental animals caused in one-half hour marked turbidity, and later on a sediment; while a mixture under the same conditions of horse's blood, or of human blood with that of another rabbit failed to give any reaction. The examinations of the dried blood on the boy's clothing took place four months after the presumed murder, and gave undoubtedly positive results. The author considers this biological method of blood examination of immense importance in legal medicine. The reaction is very evident and remains so for a considerable time, for almost two days.

Qualitative Difference of Spinal Reflex Corresponding with Qualitative Difference of Cutaneous Stimulus.—Qualitative differences between spinal reflexes provoked from the skin, according to C. S. SHERRINGTON (Jour. of Physiol., Aug. 24, 1903), are usually distinguished only in so far as dependent on differences in the regional locus of their initiation. But the variety of species of sensation elicitable from the skin suggests that possibly different reflex motor reactions attached to the different species of end-organs undoubtedly coexisting in one and the same skin field. The author found in experiments on dogs that this is really the case, the different kinds of nerve-endings situated in a certain cutaneous area possessing reflex spinal connections differing wholly inter se. For discrimination between certain sets of end-organs in the skin there are, in fact, available not only psychological criteria involving processes of sense, but data purely physiological with characteristics given in tensions of the musculature.

The Formation of Uric Acid in Birds.—The literature on the subject of the origin of urea in mammals and uric acid in birds is richly increased by the contribution of T. H. MILROY (Jour. of Physiol., Aug. 24, 1903). He found that such a mineral acid as hydrochloric acid in doses smaller than those which result in acid-poisoning, affect the uric acid synthesis, diminishing the transformation of ammonium salts into uric acid. The same occurs with lactic acid but on neutralization the effect is no longer produced. Galvanic stimulation of the liver aids the synthesis, while the presence of the electrodes alone inhibits it. When galvanic stimulation of the liver is employed in the case of birds under the influence of acid, the action of the former prevents the latter making itself felt. Although the excretion of uric acid is raised by giving nucleic acid, it is not certain that this is due to a direct origin from the purin radicle. The results which were obtained on giving hypoxanthin and caffeine, unlike those described by v. Mach, also tend to show that the direct transformation of purin bases into uric acid is not an important mode of origin in the bird.

The Proteolytic Activities of the Pancreatic Juice.—The just criticism is made by W. M. BAYLISS and E. H. STARLING (Jour. of Physiol., Aug. 24, 1903) that although one of the earliest of the modern researches on the pancreatic juice, namely, that of Corvisart, was made on the pancreatic juice itself, as secreted into the duodenum, nearly the whole of the modern ideas on this subject are based on experiments carried out, not on the juice, but on extracts made in various ways from the gland itself. The authors find that under no circumstances does the pancreatic juice, as secreted, contain trypsin. Fresh pancreatic juice contains trypsinogen, and a weak proteolytic ferment resembling somewhat erepsin. This latter will digest fresh fibrin, or caseinogen, but has no influence on coagulated proteid or on gelatin. Trypsinogen is a stable body, only slowly altered by standing in alkaline or acid solutions. It is converted into trypsin by enterokinase. No other substance can effect this conversion. Trypsin is not an expression for two bodies, enterokinase and trypsinogen acting together, but is a third substance produced as a result of the interaction of these two bodies, *i.e.*, enterokinase acts on trypsinogen like a ferment (Pawlow) and converts it into trypsin. This substance is extremely unstable, and is rapidly destroyed, especially in alkaline media, and at the body temperature. This autodestruction is greatly retarded by the presence of dissolved proteids or peptones. Enterokinase is a product of the secretion of the small intestine, and mainly of its upper end, but of no other parts of the body. It is not found in blood fibrin, lymphatic glands, or leucocytes. The smallest trace of enterokinase will convert a large quantity of trypsinogen into trypsin if sufficient time be allowed. It is stable in watery solutions at 15° C., but is rapidly destroyed at 40° C.

Observations on Precipitins.—Rabbits were treated with injections of the separated proteids of oxserum by A. HUNTER (Proc. Physiol. Soc., Jour. Physiol., Aug. 24, 1903), and precipitins were obtained in every case, but the most striking fact noted was that any injection performed on a rabbit whose serum was already rich in precipitin, led to an immediate diminution, and indeed usually to a complete disappearance of the precipitating substance from the blood. It was only gradually reproduced, reappearing about the second or third day, and attaining its maximum amount about the fifth or sixth day. Each successive maximum was of course higher than the previous one. The leucocytes followed a course exactly inverse to that of the precipitins.

The Effect of Prolonged Putrefaction on the Nuclein Bases of Feces.—The results of a series of experiments performed by A. SCHITTENHELM (Hoppe-Seyler's Zeitsch., July 31, 1903) show that prolonged putrefaction causes the disappearance of the nucleins from the feces, with the exception of a small residue. Undoubtedly this disappearance is to be attributed to the decomposition effects of bacteria, either alone or with the aid of ferments.

The Effect of Enhydrina Poisoning.—One of the commonest of the very poisonous *Hydrophidæ* or seasnakes is the *Enhydrina Bengalensis* according to L. ROGERS (Proc. Physiol. Soc., Jour Physiol., Aug. 24, 1903), its venom being 10 times as powerful as that of the cobra. It produces complete paralysis of the phrenics and partial paralysis of the sciatics, and causes the blood to become very dark in color and to clot firmly and quickly when removed from the body. There is a typical paralysis of the respiratory centers and motor end plates, the latter being most marked in those of the phrenic nerves, this resembling that produced by cobra poison.

The Products of the Proteolytic Action of an Enzyme Contained in the Cells of the Kidney.—The following substances have been identified by H. D. DAKIN (Jour. of Physiol., Aug. 24, 1903) as products of the action of the kidney enzyme, recently discovered by Hedin and Rowland; the enzyme acting in acid solution: ammonia, alanin, and ammioisovaleric acid, leucin, pyreolinie carboxylic acid, phenylalanin, tyrosin, lysin, histidin, cystin, hypoxanthin, nidol derivatives which in some cases gave the reactions of skatol-amido-acetic acid, together with an insoluble residue of paranuclein. In the main the products of the intracellular enzyme are identical with these of the ordinary extracellular tryptic digestion of proteids, although arginin and aspartic acid were not formed in appreciable quantity.

The Influence of Carbohydrates Upon the Putrefaction of Proteids.—A theoretical and experimental

study of this question is offered by S. Simnitzki (Hoppe-Seyler's Zeitsch., July 31, 1903). Considered from the theoretical standpoint, he believes it is probable, in opposition to the theory of Pasteur, that animal life is possible without the presence of bacteria in the intestine. This was established experimentally by Thierfelder and Nuttal. On the other hand, the researches of Schottelins on hens showed that whereas life is possible without intestinal bacteria, yet the development of the organism is not a normal one and there is a diminution in the energy of the vital manifestations, when the contents of the intestine are sterile. The advances in the knowledge of intestinal auto-intoxication led to a search for remedies, and following on the one hand the suggestion of Bouchard with regard to intestinal disinfection, various pharmaceutical agents were tested, and on the other hand the result of empiricism, the influence of various dietetic measures was tested. The investigations of Biernacki and Eisenstadt showed that the carbohydrates have only a slightly inhibitory action upon intestinal putrefaction. With regard to a milk diet, many authors are unanimous that this leads to a marked diminution in intestinal decomposition. These authors do not agree, however, as to what constituent or constituents of the milk are responsible for this effect. The following suggestions have been made, namely: (1) casein, unlike the other proteids, is less apt to undergo putrefaction; (2) milk sugar prevents putrefaction; and (3) this process is prevented by lactic acid and other decomposition products of milk. Experiments on the treatment of wounds performed during the brilliant age of antisepsis, have shown that concentrated sugar solutions are capable of influencing the vitality of bacteria, and this was practically applied in the cleansing of wound-surfaces. In 1888, J. Bey suggested the use of ordinary sugar-syrup in the treatment of burns. The progress of bacteriology has rendered it possible to teach that suger, even in very weak concentrations, has at times an unfavorable influence upon the vital manifestations of certain bacteria, for example, the *Staphylococcus pyogenes aureus*. It naturally appeared to be of some interest to determine the fate with respect to intestinal antisepsis, of sugar administered per os. The experiments of the author showed the following: The decomposition processes of sugar and proteid begin in putrefying mixtures at the same time, but do not proceed proportionately. The presence of sugar inhibits the decomposition of proteid by bacteria, and the quantity of decomposed albumin stands in reciprocal relationship to the content of sugar in putrefying mixtures. The various forms of sugar have a different effect; the inhibitory effect of milk-sugar (50 per cent. solution) is greater than that of similar solutions of grape-sugar and galactose, while the effect of grape-sugar is greater than that of galactose. The acids formed from sugars taken in by the mouth, have a similar effect: lactic acid, as well as it salts, has an important action in the prevention of the decomposition of proteids.

The Composition of the Blood-proteids in a Case of Alcaptonuria.—This is an hereditary disease characterized by the presence of homogentisinic acid in the urine. Tyrosine and phenylalanin have been recognized as the mother-substances of homogentisinic acid. E. Abderhalden and W. Falta (Hoppe-Seyler's Zeitsch., July 31, 1903) found in a case of alcaptonuria, the presence of homogentisinic acid in the blood, and that the proteids of the blood in this case contained tyrosin and phenylalanin and in the same proportion and amount as these are present in the blood of normal individuals. This proved that the disturbance underlying alcaptonuria is to be sought neither in the intestinal canal nor in the process of absorption. It depends upon the quite localized, specific disturbance in the catabolism of proteid. This has been found also to be the case in the cystindiathesis.

NEUROLOGY AND PSYCHIATRY.

Bladder Center in the Cortex.—The fact that children obtain full control over the bladder only as their intellectual faculties develop, makes it probable that a cortical center controls the innervation, besides the lower centers in the cord and sympathetic ganglia. Almost conclusive proof is offered by a case of M. Friedmann (Münch. med. Woch., Sept. 15, 1903). A boy sustained a fracture of the vertex of the skull without any focal symptoms, except that there was at first a difficulty in urination and later, incontinence, which persisted for over a year. The site of injury corresponded to the upper third of the posterior central convolution, directly behind the arm center. Why the other hemisphere did not assume vicarious function could not be explained.

Brain Surgery in Epilepsy and Idiocy.—Great hopes have been held out from time to time by surgeons who have operated upon cases of epilepsy and obtained what appeared to be temporarily, at least, very favorable results. A careful investigation of these cases later, however, almost always tends to reduce the ardor of enthusiasm for surgical interference. Cases for operation must first of all be carefully selected for there is only a small percentage of epileptics upon whom an operation is justifiable. The epilepsies which affect the motor side of the body promise most for surgical treatment. When the attacks are psychical, or silent in form, causing no commotion in the muscular system and no change in posture, surgery can be of little avail. Operations should be confined to cases in which the attacks are of *grand mal* or Jacksonian type, and will seldom be found of value in the *petit mal* or psychic type. W. P. Spratling (N. Y. Med. Jour., Sept. 12 and 19, 1903) reports 33 cases of epilepsy operated upon, most of them being carefully selected and offering the best chances of benefit. In 21 there was no improvement either temporary or permanent. In 8 the attacks were lessened in frequency and severity, the operation being a part of the treatment only. In 3 the disease was much worse after the operation. In one, in which there was apparent recovery, the operation was done for the removal of the uterus and appendages, which were seriously diseased and which evidently periodically produced a form of auto-intoxication. In only four was there any decided improvement and it was impossible to say how much benefit was derived in these cases from the medical treatment which was also maintained. Certainly these results are not very hopeful. It should be said, however, that there was no death from operation. In regard to idiocy the results from operation are even less bright. There are, of course, many cases of idiocy in which it would be the height of folly to attempt any operation. Some cases of hydrocephalus, microcephalus or premature ossification of the fontanelles and sutures would appear, theoretically, at least, to offer some hope of relief. A report of 83 cases, which had been followed for some time after operation, showed that 20 died from the operation itself or soon afterward; 54 were unimproved, and only 9 were benefited. The 9 who were improved showed it mostly in being quieter. This must not be taken for a gain in mental power for it frequently means the opposite. Jacobi says: "It appears in the face of so many deaths and so few results, that the operation is not promising to mankind. The operations thus far performed do not effect what they were intended for; they do not even enlarge the cavity."

THERAPEUTICS.

Bromide of Methyl Atropine.—A further experience with atropine in the treatment of asthma has led G. CAMPANELLA (Gazz. Osped., Sept. 20, 1903) to give the preference to the bromide of methyl atropine; this preparation being, in his experience, devoid of the untoward effects of atropine sulphate, and in many instances relieving the dyspnea within a few minutes, when injected in the proportion of from a half to three quarters of a Pravatz syringeful. Though conferring almost immediate relief of the respiratory distress, the remedy induces dryness of the throat and, in some patients mydriasis with elouded vision, and ischuria.

Treatment of Anthrax with Oxygen.—The various methods of treating anthrax are reviewed by G. BARNICH (Jour. Méd. de Bruxelles, Sept. 24, 1903) who has had his best results from local application of a current of oxygen gas. This is accomplished, when the pustule has broken down, by directing, upon all parts of its surface, a current of oxygen from a cylinder containing the gas under a pressure of twenty atmospheres. This treatment is continued for fifteen minutes and is supplemented by injections of the gas into the surrounding tissues by means of a Pravatz needle attached to the end of the delivery tube, and compresses saturated with dilute peroxide of hydrogen. If the anthrax be seen in the stage of tumefaction before suppuration has set in, injections of the gas into the tumefied tissue and surrounding inflammatory areola, followed by a dressing saturated with peroxide frequently suffice to abort the pustule. The Pravatz needle should be inserted at numerous points, and at each introduction the gas should be allowed to flow for about a half minute or until gaseous crepitation is felt; the tumor being thus isolated, as it were, in an atmosphere of oxygen. From one to two treatments usually suffice to effect a eure.

Spurious Creosote.—The secretary of the New York Board of Pharmacy, C. S. ERB (Merck's Report, Oct., 1903) finds on personal investigation that a number of New York druggists dispense "coal-tar creosote" when "creosote" is preseribed. The creosote of the U. S. Pharmacopœia is wood creosote, preferably that made from beechwood, while coal-tar creosote is a distinctly different substance and poisonous. The Board intends to proceed vigorously against these pharmacists for their criminal negligence.

Atropine in Intestinal Occlusion.—In the ease reported by VOLTMAN (Roussky Vrach, Sept. 13, 1903) there was a sudden access of pain in the left lower abdominal region; this was followed by obstinate constipation and vomiting of green matter. Castor oil failed to move the bowels. The general condition not bad, pulse 92, temperature raised but slightly. Palpation causes pain; abdomen rigid to touch. Treatment—at first expectant—consisted of the administration of opium and pieces of ice internally. An enema on the sixth day produced no effect, except in the way of intensifying the pain to a very marked extent. A hypodermic injection of atropine, 1-40 of a grain, was then administered, followed in an hour by another of 1-30 gr., and in two hours by 1-20 gr. Pains better after the second, and entirely disappeared after the third injection, and the vomiting ceased; the bowels moved in a few hours; patient discharged convalescent on the next day. In the second case, that of a woman aged forty years, the symptoms of ocelusion were signalized by severe pains, inflated abdomen, general malaise, constipation of ten days' duration, vomiting of green stuff, normal temperature, and pulse of 105; face characteristic; hiccough and belching. A hypodermic injection of 1-30 gr. of atropine eased the pain somewhat, but had no influence over any of the other symptoms; two injections of 1-20 gr. each failed of any result; meanwhile the general condition of the patient, as could be judged by the failing pulse, grew gradually worse, and a laparotomy was resorted to. The peritoneum contained a serous flaky fluid, the intestines were at certain spots markedly injected; at one spot there was considerable strangulation of the intestine which was freed without great difficulty. The condition of the patient became so alarming that the operation had to be discontinued, and patient died in one-half hour from cardiac paralysis. The reader is left to draw his deductions from the above cases as to the utility of atropine in intestinal occlusion.

Large Doses of Unguentum Hydrargyri.—Some seven or eight years ago Dr. Ivanoff recommended warmly large doses of mercurial ointment in post partum parametritis, and M. BIELOGLAZOFF (Prakt. Vrach, Sept 20, 1903) reports a few cases in which he obtained very favorable results from the drug. Of the cases reported we note one in which there was a parametritis after delivery; this was treated principally with vaginal balls of ten grains of mercurial ointment each and hot injections. As no results were obtained inunctions of two and three drams of the ointment were resorted to, increasing the dose to an ounce; as a result the exudate disappeared in a few days, and the patient left the hospital entirely recovered. During fifteen days of treatment 60.0 grm. of the ointment was used up. In another case the amount used up reached 75.0 grm. Among the conclusions we note as particularly interesting the one where the author ascribes to mercury the diminution of pain, and the absorption of the exudate. There were no mercurial after-symptoms of any kind observed in any of the patients. The whole matter is, however, as yet sub judice.

Lysoform.—Lysoform really seems to have properties which make it far superior to other disinfectants, according to B. GALLI-VALERIO (Therap. Monatsh., Sept., 1903). Nickeled instruments, even if kept for months in a three-per-cent. solution are not attacked. Used for the hands in 3- to 10-per-cent. solution, it deodorizes and renders the skin smooth. A 1- to 2-per-cent. solution is serviceable as mouthwash. Animal experiments show no or only slight toxic action. Feces and urine mixed with small quantities of the drug were still odorless after three months. Colon bacilli did not grow, even in weak dilution, and experimental peritonitis in guinea-pigs could be cured by intraperitoneal injections of a 2-per-cent. solution.

Glycosal in Rheumatism.—The properties of glycosal are praised by H. RATZ (Therap. Monatsh., Sept., 1903), since this drug, by virtue of its peculiar chemical composition, passes the stomach unchanged and liberates salicylic acid in the intestines, so that all gastric irritation is avoided. General and local symptoms disappear more readily than with aspirine but endocarditis cannot be prevented any more than with other salicylic acid compounds. After-symptoms were not observed except a slight pruritus and tinnitis aurium. Glycosal is also absorbed from the unbroken skin if alcohol, turpentine or some other volatile substance is added to the ointment.

Treatment of Dysentery.—A rapid, almost specific action is exerted upon pathological conditions of the intestines, such as are common in the tropics by a decoction of cortex granati, simarubæ and lignum campeche with the addition of some silver nitrate. L. KÖHLER (Therap. Monatsh., Sept., 1903) was able to cure almost hopeless cases with a tablespoonful of this mixture every twelve hours. The most delicate infants and patients with weak digestive organs experienced no nausea or untoward symptoms and amelioration already occurred in twelve hours.

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SATURDAY, NOVEMBER 21, 1903.

THE KAISER'S CASE.

WE have waited for more definite details as to the case of the Emperor of Germany before commenting upon it. The end of last week proved the advisability of such delay, since it brought the authentic report that while the growth in the Emperor's throat was spoken of originally as a polypus this was only a generic name loosely applied. It was not a true polypus in the sense of being properly pedunculated or having a true stem but was on the contrary of sessile character and its presence had brought considerable inflammation all over the vocal cord on which the polypus was situated.

This presents quite a different phase of the case from that which was apparently to be gathered from the original newspaper reports. Needless to say, a sessile polypoid tumor, with apparently a distinct tendency to infiltrate neighboring tissues, is much more dangerous as regards possible future malignant contingencies than would be a thoroughly pedunculated neoplasm affecting cells extraneous to itself only because of the irritation of its presence and the pressure of its growing tissue constituents.

The case has, of course, attracted widespread attention and has renewed the discussion of the subject whether cancer is hereditary or not. The Kaiser's father and mother both died of cancer and this would seem to add distinctly to the risk of any tumorous formation in his case proving eventually malignant. The whole question turns on the significance of heredity in such cases. There is no doubt that cancer seems to run in certain families and that in something over one-third of the cases that come under observation a family history of cancer in the more or less immediate ancestry can be traced, if the inquiry is only made with sufficient assiduity. There are those, however, who insist that notwithstanding this apparent etiological influence of heredity the question of inheritance is entirely due to coincidence rather than to any pathological tendency in the tissues.

At the present time, notwithstanding all the investigation of the etiology of cancer that has been undertaken in recent years, there is no generally accepted theory of causation. Prominent pathologists, who have made a specialty of the etiology of cancer, are prone at the present moment rather to accept one of the old theories of etiology in malignant disease than to concede that the affection is due, as many bacteriologists claim, to the presence of a parasite in the tissues. The most popular theory of cancer etiology remains that of the development of certain misplaced portions of tissue which were faultily included amid tissues more or less foreign to them during the process of embryonal development. Any injury in the neighborhood of these misplaced bits of tissue or any chronic irritation that weakens the resisting powers of neighboring cells may lead to the development of the cancer nodule to such a degree as to cause the death of the person in whom these embryonal tissue inclusions had been slumbering for many years.

It is easy to understand that this theory favors the influence of heredity as a factor in the causation of cancer. It is well known that tissue defects of various kinds run in families. Small tabs of tissue near the ears, for instance, are a characteristic family trait in many persons and may be traced for many generations. Other family birthmarks of many kinds, but all of them due to redundancies of tissues, are so common as no longer to attract much attention. They are considered to be family traits and no further thought is given them by the observer. They are really the best possible evidence for the inheritance of such tissue anomalies as might give rise to cancer and for cancerous family heredity.

The attack in the case of Emperor William is by no means encouraging, as the bulletins of his specialist attendants seem to indicate. Prof. Orth's pathological findings with regard to the material removed fail utterly to have weight in the case when we recall that on three different occasions the late Prof. Virchow examined portions of the tumor from Kaiser Frederick's larynx, yet failed to find any evidence of malignancy at a time when the clinical diagnosis of malignant disease was already settled in the minds of the German medical attendants.

The whole case is only another lesson in our lack of definite knowledge with regard to cancer and the consequent necessity for the greatest care in the prognosis of these borderland affections which, in tissues liable to frequent irritation in the exercise of normal functions, as is surely the case in Emperor William's larynx, may well take on malignancy in spite of every precaution in the treatment of an originally benign neoplastic process.

THE PRACTICAL ELIMINATION OF YELLOW FEVER.

It has, it seems, been long a mooted proposition among scientific observers, particularly with those who labor in the fields of the Spanish possessions, as to which class of the Latin colonial races can be regarded anthropologically, as the "fittest." This vexed question now appers to have been definitely answered by the inhabitants of Protera, in Mexico, who have, it is reported, decreed that the only survivors shall be those who are untainted by yellow fever The alcalde and council have sustained their action, and orders have been issued that all sufferers of the disease shall be promptly poisoned as soon as the symptoms can be identified or the diagnosis be made beyond a reasonable doubt.

As is now well known, a serious yellow fever epidemic has been raging along the Rio Grande for some weeks past, and the cases have run up into the thousands, while the death rate, as could only be expected among such unhygienic surroundings, has been appalling. In the face of such a condition of affairs it became apparent—even to the Mexican mind, which, like the Mexican cayuse, seldom stands without hitching—that "something must be done." They were perfectly willing to admit that the mosquito carried the germs of the infection, and thus spread the epidemic, but they were naturally much more interested in the "stamping out" of the disease itself than they were in the theory of its etiology. Gauze nets did not a prison make, at Laredo, nor mosquito bars a cage at Monterey. Dr. Stiles had not succeeded in breeding his *Stegomyia fasciata* destroying parasites, as duly scheduled in the daily newspapers, with a photographic attachment, and it was more than evident to the *Ayuntamiento*, or "selectmen" of this Mexican township that if any result was to be attained some other means certainly must be employed.

That this method of suppressing the ravages and spread of the disease is somewhat drastic is true, but can it be denied that it would be thorough? Is there any logical doubt but that it would prove effectual? Thus we know that the mosquito is the principal, if not, as claimed, the only vehicle, for the transmission of the disease, for we have been taught that if an insect of the proper species bites a patient suffering from the malady and subsequently stings a perfectly healthy individual, that he will, in turn, be inoculated, and that the fever will thus spread and be carried from person to person and from town to town.

It is proverbially a poor rule that will not work both ways, and all equations have two sides. If the mountain could not be brought to Mahomet, and if the mosquito vehicle could not be eliminated, why not take the founder of Islam to the hillside and kill the patient as soon as the symptoms are developed, and thus destroy the focus of infection? Dead and buried, they could not furnish food for the net-evading mosquitoes, and the epidemic would terminate, from the want of fresh inoculating centers. Men have died and worms have eaten them, but there are no reported cases of the ubiquitous mosquito having penetrated six feet of earth.

As to the City Fathers of Protera, to them we make our bow. The blue ribbon of originality should mingle with their civic ermine, and their reasoning is sound, even if hardly practicable in other communities that cannot boast of such an ancient civilization. We must remember, too, in their defense, that even if their promulgations strike us as a little arbitrary, that they are surrounded by their friends and immediate relations, and that they are doubtless actuated, in a Spanish way, by the belief that they are not only doing the greatest good to the greatest number, but that from previous experience they have every reason to believe that the poison which they are to administer is no quicker in ac-

tion, or more certain in results, than the fever that they are fighting.

We must, however, admit that they are doubtless tinged with a certain local coloring, and are imbued with an exaggerated idea of the value of the lives that they are seeking to preserve. For the ordinary American cowboy, who has been brought in contact with the lower Mexican classes, seems possessed of a fixed and firm belief, which he is prepared to argue, even at the pistol's point, that the intrinsic worth of a dead "Greaser" is as a hundred to one of the live article; and that a race, whose sole virtue—early rising—is simply the fruit of a desire to have more time in which to loaf, can hardly spend its leisure better than in the convalescence of a tedious and lingering disease.

But, be this as it may, the scheme strikes us as not only novel, but efficacious, and as it originated in Mexico, we should advise that the experiment be made there during the present epidemic, as they suggest—that the drugs employed should be imported, and that they should be administered on a holiday, to avoid delay, and to prevent such a meritorious plan from being forever lost in the national *mañana* of the country.

EXPERIMENTAL BIOLOGY AND MEDICINE.

Few medical societies are able to present a set of proceedings containing so much interesting and suggestive material as is to be obtained in the brief account of the last meeting of the New York Society for Experimental Biology and Medicine, which will be found on page 957 of the last issue of the Medical News (Nov. 14). There is just that combination of the original in biological science with possibilities of direct medical application that is sure to make valuable working material when the principles experimentally discovered are tested by actual practice. Dr. Park's article on the occasional presence in the blood of untreated adult animals of large amounts of substances agglutinating many bacteria gives an excellent idea of how much wider than is ordinarily supposed is the problem of agglutination and its significance. Agglutination is probably connected with immunity and the subject of natural immunity is one of the most interesting in the whole domain of medicine. Just why some people contract certain diseases while others apparently of similar constitution and without any known artificial protection remain refractory is one of the mysteries that modern pathologists are more interested in solving than almost any other of the obscure problems which come up for their consideration. It is very clear that this natural agglutination described by Dr. Park is going to be the source of many errors and a number of false hopes unless the greatest care is exercised in precautions against possible error before definite announcements of results are made. It would seem that even such excellent authorities as Shiga, the discoverer of the bacillus of dysentery, and our own Flexner were led into error because of this hitherto unconsidered factor in the problems they were working out. Duval and Bassett, who announced that they had found the dysentery bacillus in a number of cases of cholera infantum a little over a year ago, were certainly misled to false conclusions, and their mistake is due to the assumed principle that the existence of agglutinating powers in the blood serum of certain patients was the proof of the fact that they were being affected by certain forms of bacteria. It is interesting to find that young animals have very few agglutinins in their blood, and that therefore probably the same thing will hold true for young children. It is possible that the first agglutinating powers obtained by the child's blood are derived from its mother's milk, and are possibly due to the fact that this fluid has been influenced by the immunity to certain diseases produced by attacks of these specific diseases during the mother's previous life.

Dr. Calkins' discussion of the smallpox organism seems to demonstrate that the appearances observed in smallpox cases are those of a protozoan parasite, since the different stages of the organism have been definitely recognized by him. A very interesting side-light on smallpox is thrown by the demonstration of a corresponding parasite in certain forms of *Paramœcium*. This is a very common lower organism which exists in abundance in pools and swamps, and may even be found under certain circumstances in ordinary drinking water, and it is not impossible that it may prove to be the host of the smallpox organism outside of the human body. Now that the secondary hosts for malaria and yellow fever have been demonstrated, it may be expected that further such important steps in biology will be made with quite as beneficial effects in practical medicine. If this special bit of progress should come for smallpox next it would indeed be an important advance for sanitary science and prove of the greatest possible benefit to the race.

Dr. Meltzer's demonstration of the effect of ligature upon the circulation in sciatic nerves is an eminently practical demonstration of the influence of the peripheral circulation on the nervous system. When a single ligature is applied to the sciatic nerve and methylene blue is injected intravenously into the animal, the nerve becomes completely stained, just as if there were no ligature. When two ligatures are applied, however, some distance apart then the portion between the ligatures does not become stained blue, though the peripheral portion of the nerve beyond the external ligature and the proximal portion inside of the internal ligature do become colored. It is evident, then, that a considerable part of the circulation of nerves is derived from the periphery of the body. No matter how distant from one another ligatures are applied along the trunk of a nerve like the sciatic, no staining is found between the ligatures. Therefore, when any pathological condition causes a lessening of the circulation in the skin and outlying portions of the body, nervous nutrition must suffer. This explains why hydrotherapy, massage, gentle friction of any kind, and even the application of mild counterirritants is effective in producing distinct changes for the better in the peripheral nervous system.

We have selected for comment only certain of the articles under discussion before the Society, because they seemed of specially suggestive value. The whole proceedings, however, will be found of great interest. There is no doubt that this class of work and the combined investigations of biologists, experimental and medical observers will do much to bring up the standard of medical originality here in America and will also serve to redeem much of our medical society proceedings from the aspersions sometimes cast upon them of seldom containing original material of any value and of usually consisting of scarcely more than a farrago of things already long known and sometimes even long since unlearned.

THE CANCER PROBLEM.

The etiology and cure of cancer has occupied the minds of men and stimulated the research from the very dawn of medicine and to-day there is hardly a large laboratory, here or abroad, where diligent study is not directed to this most difficult of problems. It is to be regretted that with so enormous a literature—Behla has collected several thousand references up to 1901—such a discordance of opinions should still exist among the foremost pathologists.

Nevertheless much has been done to cure cancer. Operations have been so perfected—we refer only to the Wertheim method of hysterectomy—that many a patient remains free from recurrence for the rest of his life. With better education of the laity and keener diagnosis on the part of the physician, the disease is recognized earlier and hence the outlook in general is more favorable. Superficial cancers have even been cured without the knife, by such agencies as liquid air and arsenic, and, more recently, with Roentgen and radium rays. But the fact still remains that most internal cancers are hopeless and that the surgeon often operates only with the hope at best, of prolonging life for a few months.

In glancing over the more recent literature, one receives the impression that the parasitic theory of cancer is on the wane. The laity is somewhat late to discover what physicians have already discarded, hence it does not seem strange that the city council of Vienna recently recommended an exhaustive trial of cancroin in the hospitals. It will be remembered that cancroin was obtained directly from the cancer cells by Adamkiewicz, whose methods of bringing his discovery before the public were neither ethical nor convincing. Yet the idea does not seem altogether phantastical that in cancer the epithelial cell no longer works in unison with the other cells for the benefit of the entire body but solely for its own good, thus assuming the rôle of a parasite which when injected in attenuated doses may inhibit the growth of similarly abnormal cells in the body.

This theory has, however, met the same fate as the brilliant work of v. Leyden, the diligent research of Plimmer, Sanfelice and our own Gaylord, and the painstaking studies of Feinberg, who has devoted an entire volume to the finer structures of the protozoa and has demonstrated their close resemblance to the cell-inclusions of cancer. For every convincing article, a second one appears which points out some flaw in the observations. Recently T. Honda (*Virchow's Archiv*, Vol. 174, No. 1) has found the inclusions not only in glandular carcinomata but also in a number of other tumors and inflammatory processes, so that they can hardly be looked upon as specific.

Doubtless the real cause of cancer is not always the same. In certain organs, as in the uterus, the various transition stages between chronic inflammation, benign adenoma and malignant carcinoma are often so apparent, that the whole seems to

form one continuous process. It seems very probable that malignancy here is merely the end result of chronic irritation and inflammation. But there still remains a large number of cases in which the connection is not so clear and with a better knowledge of the life history of protozoa and with means to grow them outside of the body the mysterious hyaline bodies may still play a prominent part in pathology. Let us hope, then, that a satisfactory therapy may be not so far off.

ECHOES AND NEWS.

NEW YORK.

Trustees of Hospital Association Meet.—A meeting of the Board of Trustees of the Hospital Saturday and Sunday Association was held last week at the United Charities building. The application of St. Andrew's Convalescent Hospital for admission to the Association received favorable action. This brings the membership up to forty. The New York Hospital formally waived its privilege to receive a share of the annual collection. The general agent reported on the prospects of the coming collection, and ways and means for promoting it were discussed. The last collection resulted in a total of $83,500, a considerable increase over any previous year. The necessity for promoting a greater public interest in hospital support to meet the ever-increasing demand for free work was urgently presented by the representatives of various institutions.

Meeting of Hospital Guild.—The Hospital Guild of New York Hospital for Women held last evening its first meeting of the season. Reports were received from the committees which had continued work during the summer. Several physicians spoke of the standard of excellence preserved at the institution in One Hundred and First street. The hospital, however, has become overcrowded, and the Guild has decided to devote most of its energy this winter to raising a fund to start a new ward for children exclusively.

Bellevue's New Dispensary.—The old building formerly used as the Bellevue Medical College was thrown open this week, and will be known hereafter as the Dispensary for the Outdoor Patients. The structure has been renovated and made fireproof at a cost of $53,000. The first floor of the present dispensary building will be used for the dispensary proper and the bookkeeping department, while the remaining three floors are to be used as sleeping apartments for the female employes of the hospital, who heretofore have been forced to sleep in the basement of the hospital buildings.

Choice of Hospital Site Delayed.—There seems to be another hitch over the selection of the "site for a State hospital for the insane at some place in the counties in the northeastern part of the State, north of the County of Rensselaer." As Washington County is the only county between Rensselaer County and the boundary line of Vermont State, sites in no other county have been considered. The act providing for the selection of the site and the expenditure of $50,000 for land and necessary expenses of the commission, in preparing plans by the State architect, for expert engineers, etc., makes this condition: "Such site shall be so located as to be easily approached by railroad and other means of communication." Originally the committee of the State Lunacy Commission considered nine sites. The number has finally been sifted down to four, known as the Greenwich, the Cambridge, the Whitehall, and the Comstocks. Each contains the requisite 1,000 acres, and the committee says any one meets all the requirements. The members of the committee assert that the lucky site will win out on its merits, but there are others who believe that the much-agitated Republican politics of Washington will figure in the selection. In order to ward off suspicion of political maneuvers the committee decided to employ an expert engineer from Cornell University, but later reconsidered its determination. Of the four sites, it is intimated that the Comstock land has the preference with a majority of the committee.

Railway Surgeons' Convention.—The thirteenth annual convention of the New York State Association of Railway Surgeons was held last week at the New York Academy of Medicine, 21 West Forty-third street, with Dr. Henry Flood of Elmira, President of the Association, as Chairman. Dr. James A. Exton, of Arlington, N. J., discussed "Car Sanitation." Dr. C. B. Herrick, of Troy, N. Y., read a paper on the diagnosing of injuries to the head. Dr. Wisner R. Townsend, of this city, talking about "The Diagnosis of Injuries of the Hip," recommended that in diagnoses in children's cases the X-ray be used. Dr. Walter Lathrop, of Hazleton, Pa., sent a paper on "Modern Treatment of Wounds." In a paper by Dr. W. B. Coley, of this city, on "Traumatism as a Factor in the Causation of Hernia," the doctor said that his experience at the Hospital for the Ruptured and Crippled had shown that in only four cases out of 15,000 had hernia resulted from external accident. Dr. A. J. Gilbert declared that hernia had cost the railroad companies more money than any other cause of injury, and that it is a "frightful source of fraud, particularly among employes." The following officers were elected: President, C. G. J. Finn, Hempstead, L. I.; Vice-President, Dr. G. T. Conn, Concord, N. H.; Secretary, Dr. George Chaffee, Brooklyn, re-elected; Treasurer, Dr. J. K. Stockwell, Oswego.

Test for Diphtheria Antitoxin at Elmira.—Many new facts are likely to be brought out by the use of antitoxin in the rather severe epidemic of diphtheria now going on in the State Reformatory at Elmira. Over 50 cases have developed, including the assistant resident physician, and three deaths are reported up to the present time of writing. The entire supply of antitoxin in the city was bought up and appeals were made to the State. A supply of 1,500,000 units was received from the State Laboratory and every inmate in the reformatory inoculated. Resident Physician Christian and Dr. Frank W. Robertson, the Superintendent, have declared the epidemic completely and suddenly checked. Dr. Robertson said that antitoxin had made all inmates not already infected with the disease immune, and that the epidemic was completely under control, due to the antitoxin. All State medical societies have asked for a complete history of the cases, and it is likely that the results at the reformatory will figure in future literature relating to antitoxin.

The New York Medical Gymnastic and Massage Society.—This Society announces that after November 15 a clinic will be in operation under its auspices for medical gymnastic or massage treatment. Physicians often have patients of limited means for whom they would like to prescribe this treatment, were the expense not prohibitive. The proposed clinic will be a beginning in making a provision for the needs of

this class. Suitable rooms have been secured on the first floor at 210 East Forty-first street. Treatments will be given daily from 11 A.M. until 3 P.M., Saturdays and Sundays excepted, under the supervision of an Official Staff appointed by the Society. The treatments will be given by members of the Society, a sufficient number of whom will be present at each clinic hour. The same members are present at the same hour each day, so every patient will be treated throughout by the member to whom his case is at first assigned. Should any physician desire to put a patient under the charge of any particular member of the Society, an effort will be made to so arrange it, the member's time permitting. In order to provide for the maintenance of the clinic, in its essential expenses, patients will be charged an amount ranging from 25 cents minimum, to 75 cents maximum per treatment, according to their ability to pay. No free treatments will be given at the beginning unless by a vote of the Official Staff. The Society and its members give their efforts and time without remuneration. All receipts, either in fees or contributions, which may at any time exceed the amount necessary for the running expenses, will be devoted to increasing the facilities for work.

Three New Water Sources for City.—Three new sources of supply for increased water service for the city, each separate and distinct from the other, will be recommended within the next two weeks by the special commission appointed several months ago by Mayor Low to investigate the matter. The report was to have been submitted to Mayor Low Tuesday, but owing to the exhaustive investigation which the three Commissioners, Professor William H. Burr, Rudolph Hering and John R. Freeman, have made it has been impossible to complete it on time.

The commission will recommend that the city first acquire additional watersheds on the east side of the Hudson river, on the Upper Fishkill and Clinton Hollow, on the Upper Wappinger, in Dutchess county, establish a chain of enormous reservoirs, several of which will be much larger than the new Croton reservoir, and all to be connected by a line of aqueduct more than eighty miles in length. The commission will point out that by taking up this part of the work first the city will save the delay necessary to dig tunnels under the Hudson and bring water from the Catskill watershed. As soon as this work is under way the commission urges that the city should begin the purchase of property in the Ramapo region to get control of that watershed. The principal dam, they point out, should be built in the vicinity of Bishop's Falls, on the Esopus River, where it has been found that a dam of much greater height than has heretofore been deemed advisable may be constructed. This, the commission says, will make it possible to flood an area of more than fourteen square miles and provide a storage reservoir of more than double the size of the new Croton reservoir. In addition to this dam five others are recommended—viz., at Cold Brook, Lake Hill, Wittenburg, Shandaken and Big Indian. All of these are on the southern and eastern slopes of the Catskills. The commission proposes also to utilize the watersheds on the opposite side of the mountains and to turn the water into the Esopus by means of a tunnel thirteen miles in length, crossing under the Catskills from the Schoharie watersheds. Four sites for large storage reservoirs in the upper Schoharie watersheds have been located, so that this system will have a total of ten reservoirs large enough to hold in reserve the great supply of water which that region contains. Part of this supply will be utilized for Richmond Borough by extending the pipe lines through Jersey around by way of Paterson beneath the Kill von Kull. The third step to be recommended for bringing the supply up to the demand of the future New York is a filtration system in Dutchess county to purify the water of the Hudson river. A system capable of filtering fifty million gallons of water a day at the outset and so arranged that it may be increased from time to time is proposed. The entire report, covering all the details brought out by the extensive surveys and the thousands of borings made by the engineers sent out by the commission, and the estimated cost of the work, is to be sent to Mayor Low about December 1. It is now being printed, together with the maps and diagrams showing what work is necessary and just where each reservoir and pipe line is to be located. The completion of the first section of the work alone will require many years. After approval the scheme will undoubtedly be carried out under the direction of the Aqueduct Commission.

Mortality Rates in New York.—"A study of the ratio of deaths to population in this city by John F. Roche, made primarily for the life insurance companies," says the *Tribune*, "brings out a number of facts with which the general public is probably not well acquainted. To serve the special purposes he had in view his inquiry related to the bearing of sex and age, rather than that of disease, on length of life. In all respects the metropolis would not represent the country at large. The paper now reprinted from the 'Transactions of the Actuarial Society of America' was based on the census of 1890, and not that of 1900. Moreover, Mr. Roche refrains from philosophizing over the facts presented. None of these considerations, however, materially lessen the interest which attaches to his analysis. Possibly the most curious and novel feature of his statistics is the way in which first one sex and then the other exhibits superior vitality. Although a larger number of boys than girls are born here, the former appear to succumb more readily than the latter to the diseases and accidents of infancy and early childhood. At the age of seven Mr. Roche's tables indicate that a numerical advantage of about 1,000 in births has been wiped out, and thenceforward what has been regarded as the more tender sex continues to make the better showing for more than twenty years. Thereafter the pendulum makes two oscillations. Between the ages of twenty-nine and fifty-six men are—or were in 1890—more numerous than women. From that point onward the latter are again in the ascendancy. When the Eleventh Census was taken there were in this city 1,680 men who were seventy-five years old, and 2,120 women. For persons eighty-five years old or more the figures were respectively 201 and 518. The greater endurance in infancy and old age here revealed more than compensated for the higher mortality of women in middle life. The net result may be put in this fashion: Out of a population of about 3,500,000 there were at least 25,000 more girls and women than boys and men, and yet there were 5,000 fewer deaths among the former than among the latter. From this state of things Mr. Roche estimates that at the time of birth in this city the 'natural expectation of life' for a boy is thirty-nine years and for a girl forty-three. That an enormous proportion of children die before reaching the age of one full year is only too well known. It amounted to over 18 per cent. in 1890, or one death for between five and six births. A less familiar fact is the stage at which the minimum mortality occurs. The rate falls off rapidly with both

boys and girls from infancy to the age of eleven, when it is only one in about 440. Thereafter there is a steady increase. It slightly exceeds 1 per cent. at thirty, and 8 per cent. at three-score years and ten. About 20 per cent. of the women who attain the age of eighty-five, and 25 per cent. of the men, drop off inside of the next twelve months. Mr. Roche was able to make no comparison with the mortality of earlier years, but there is ample evidence from other sources that the average length of life in the United States has increased in the last quarter of a century. This results mainly from the adoption of sanitary precautions in large cities and from a better understanding of the nature of disease. Still greater progress, though, may be expected in coming years. Mr. Roche bases some of his hopes for the future in the metropolis on the filtration of water here. No doubt that will come in time, even if the death rate from typhoid fever remains as small as it is now. However, the greatest scourge is tuberculosis, which in 1900 caused 13.6 per cent. of the mortality in the metropolis. When the ignorant classes understand as well as do educated people what measures should be adopted to prevent infection with this disease a wonderful diminution of harm from it will result."

PHILADELPHIA.

Aged Negress.—Mary McDonald, a negress, celebrated her 133d birthday recently at the Home for Aged and Infirm Colored Persons. She did not know it was her birthday until she was congratulated by the matron and then said she did not wish to live much longer as she was too much bother to those around her.

Honor for Dr. Kirk.—The Dean of the dental department of the University of Pennsylvania, Dr. Edward C. Kirk, has just been notified that to him has been awarded the silver medal for the current year which the "Societe d'Odontologie de Paris" awards every year to the author of the best works published during the previous five years. The letter of notification from the Secretary of the Society closed as follows: "We desire to add to the good news herewith conveyed our heartfelt congratulations, and we further wish to inform you that the announcement to the Society of this just award was enthusiastically received."

Judge Determines Physician's Charges.—Judge Penrose, in the Orphans' Court recently, gave his views on physicians' charges when dealing with the estate of a spinster, who died in Atlantic City in 1902. He found a balance of $10,959.95 for distribution. One physician asked $350 for medical services, $400 for surgical services and $45 interest—$795 in all. "The claimant," said Judge Penrose, "was examined without objection to his competency. He testified that his practice was to charge from $3 to $5 a visit, the latter being the rate 'for people in good circumstances stopping at the better class hotels.' While the custom to charge persons supposed to have large means at a higher rate than the ordinary commercial value would not be illegal, in the opinion of the auditing judge the rate to be allowed for the day visits cannot exceed $3." This physician was allowed $434 for his services. A prominent surgeon who did a brain operation on the patient and charged $450 when he should have charged $1,000, was awarded $200 by the judge.

Women's Medical College.—A certain amount of discord is said to prevail between the above institution and the Women's Hospital which adjoins it and is used for the teaching purposes of the college. Although thus far the controversy between the two institutions has not been carried to the point where diplomatic relations are severed, it is feared that the latest move of the authorities of the college will make out-and-out strife inevitable. This comprises a proposition to build on the lot of land that separates the institutions a new hospital, to be under the control of the college. For this purpose the alumnæ have been asked to subscribe to a fund of $500,000. Friction between the two institutions started with an attempt on the part of the college to inaugurate an innovation, which, it was held, would destroy the identity of the hospital, lessen its usefulness and virtually make it an adjunct to its sister institution. A proposition was made that the various professors of the college be placed at the heads of their respective departments in the hospital. This arrangement was effective for a time but was finally discountenanced by the hospital authorities.

X-ray and Finsen Light Treatment.—The meeting of the Philadelphia County Medical Society November 11 was devoted entirely to the consideration of the above topics. Dr. M. K. Kassabian spoke on the Technic of X-ray Treatment. He exhibited cuts of a table which he has had devised for the Philadelphia Hospital. One advantage is that the patient can be treated from beneath as well as from above. Another feature is the diaphragm which is a sliding variety instead of an iris, as is usually employed. This table is so constructed as to protect both patient and operator. A mirror is so arranged that by looking into it the operator can watch the tube, regulate the light and observe the target without looking at the tube and thus affecting the eyes.

Dr. G. E. Pfahler reported very encouraging results in the treatment of carcinoma and tuberculosis. An interesting case was that of a retrobulbar sarcoma cured without affecting the eyesight. Dr. Pfahler finds that the more lesions have been tampered with before X-ray treatment has been begun the less likely are results to be secured.

Dr. W. M. Sweet, in discussing X-ray treatment of the eye and its appendages said that in epithelioma of the eyelid the older plastic operations were not now warranted since the X-ray was available. He has treated 30 cases with good results in all but two.

Dr. H. K. Pancoast, in the treatment of keloid by the X-ray, has found these growths amenable, but they require long and tedious efforts.

Finsen Light and X-ray in the Treatment of Diseases of the Skin.—Dr. J. F. Schamberg said that the use at the Philadelphia Polyclinic of the simplified lamp had not given results that made them at all enthusiastic. He believes that better results should have been attained by the 200 treatments in some cases. The simplified lamp does not penetrate sufficiently for deep lesions for which the Finsen lamp is necessary. As compared with X-rays these lamps are perhaps more useful in cases of lupus erythematosus. In lupus vulgaris the X-ray is better. In ulcerated areas due to lupus vulgaris the light treatment and the X-ray should be conjoined. The X-ray is better for mucous membranes and ulcerated areas and concentrated light for the skin.

The Cause of the Typhoid Epidemic.—Notes have recently been given regarding the belief of the officials that milk instead of water was responsible for the continued presence of typhoid in this city. Further investigations regarding recent outbreaks are in progress. As to their results up to the present Dr. A. C. Abbott says: "Between October 19 and November 12, inclusive, 55 cases of typhoid fever were reported from the Twenty-sixth and Thirty-sixth wards. Of this number 35 obtained their milk from

a single dealer. On investigation it was learned that between September 24 and October 5 and between October 5 and October 29 there had been two cases of sickness in the house of the dealer. These cases are represented to the Bureau as fevers—to be precise, as bilious remittent fevers—with some symptoms suggestive of typhoid fever, but not enough to justify a positive diagnosis and not enough to warrant their being reported as cases of typhoid fever. However, the Bureau decided to give the public the benefit of the doubt, and in consequence forbade the further sale of milk from the suspected premises. The house, the milk shop, and all utensils used in the business have been thoroughly disinfected. Had the Bureau received full information as to the possible nature of these cases at the time of their occurrence, much suffering might have been prevented. While it is dangerous to predict results, it is nevertheless the belief of the Bureau that an important factor concerned in the causation of a large number of the cases in the Twenty-sixth and Thirty-sixth wards has been discovered and eliminated. We regard the foregoing experiences as important arguments in favor of the position taken by the Bureau—namely, that too much attention cannot be paid to the sanitary conditions under which milk is supplied to the citizens."

Medical Jurisprudence Society.—On Monday evening, November 16, the Medical Jurisprudence Society of Philadelphia, after several years of inactivity, resumed its meetings, with Dr. Henry Leffmann, Secretary pro tem in the chair. Dr. Solomon Solis Cohen read a paper on "Judicial Determination of the Cause of Death." Dr. Cohen severely criticised the present system and considered the Massachusetts system, although by no means ideal, still an advance. He recommended a plan of which the following is a brief summary: (1) The cause of death to be determined by a jury of experts, consisting of a pathologist, bacteriologist, chemist, medical or surgical practitioner of admitted ability, neurologist, etc. (2) This jury, sitting in open court, be empowered to review the post-mortem, chemical, bacteriological and other examinations, hear testimony bearing upon the symptoms preceding and leading to death, review any evidence bearing upon the cause of death, and submit an opinion or opinions as to cause of death formulated in the shape of a report, or majority and minority reports, for the consideration of the lay petit jury before which the case will be tried. The paper was followed by an interesting discussion in which the lawyers very clearly indicated that Dr. Cohen's plan was not feasible under existing conditions, and the medical men present expressed the belief that it is doubtful whether a jury could be secured that would submit an unanimous opinion, and one lawyer believed that if such an opinion were submitted no jury would believe that it had been reached by legitimate and trustworthy methods. The Society will meet about four times yearly; the next meeting will be January 18, 1904, at which time permanent officers will be elected.

Medical Inspection of Schools.—A meeting of persons interested in this subject is to be held in Philadelphia, December 3, at 8 P.M., the place to be announced later in the daily papers. The meeting is for the purpose of aiding the plan of the Department of Health and Charities to institute a service of Medical Inspection of Schools, with School Nurses, in this city. The main address will be delivered by Dr. Ernst J. Lederle, Commissioner of Health, of New York City, who will be followed by the Supervising School Nurse of New York City, Miss Lina L. Rogers. The Mayor has consented to preside, and the President of our Board of Public Education will also speak. A discussion will follow these speakers.

CHICAGO.

Children's Hospital Commission Makes Report of Deeds and Needs.—Four months of philanthropic endeavor on the part of the Milk Commission of the Children's Hospital Society has reduced the death rate among infants and raised the standard of milk supplied to the homes of many thousands of both rich and poor. The Commission has given out the statement of its work and of its needs for the future. The funds it has on hand will keep it going until January. After that financial support must be forthcoming, but while this fact is set forth, no appeal for funds is made. The Commission prefers that its deeds should speak for it and determine to the public whether it is deserving of aid. Cases of poisoning of children by milk that was not fresh have been reported, and the blame is laid to the new rule of the Milk Wagon Drivers' Union, requiring but one delivery a day instead of two, as formerly. The drivers say, however, that under the old system the second delivery was old milk, shipped into the city at the same time as the first delivery. The Commission and the Union will now cooperate in an effort to obtain better transportation facilities, so that two daily deliveries may be had.

Praise from Dr. Reynolds.—Praise of the Commission's work comes from the Health Department. A letter from Commissioner Reynolds is made a part of the report, saying: "During the summer season there were 2,385 deaths of children under five years of age. This is at the rate of 12.6 per 10,000 of the total population. In the summer season of 1902 the proportion of such deaths was 13.3 and in that of 1901 it was 14.3. The reduction this year is especially significant in view of what was anticipated as a result of the one daily delivery plan. Children's physicians and sanitariums were gravely apprehensive of a murderous increase in child mortality through feeding of milk from forty-eight to sixty hours old. Fortunately this apprehension was not realized, chiefly, as I am firmly convinced, through the distribution of 190,000 bottles of sterilized milk by your commission."

Children's Hospital Society.—The organization of the Children's Hospital Society early last spring by the reform department of the Chicago Woman's Club is related, and then the creation of the Milk Commission, resulting from the discovery that out of 27 institutions visited by the Hospital Committee, not one was able to furnish its patients with milk of the desired standard. The Executive Committee of the Milk Commission is headed by E. P. Bicknell; Mrs. Geo. M. Moulton is Vice-Chairman, Mrs. Geo. W. Plummer, Secretary; Dr. A. B. Keyes, Auditor; and the other members are Drs. I. A. Abt and J. C. Cook. Dr. Frank Billings is the President of the Commission, and Mrs. Harold McCormick is Secretary.

Toy Pistol Ordinance.—The City Council passed a toy pistol ordinance Nov. 9, which prohibits the sale, loan or furnishing of toy pistols, guns, etc., to minors, and fixing a $100 fine for each offense.

Muzzling of Dogs.—The Chicago Medical Society, October 28, endorsed the ordinance now before the Council requiring the muzzling of dogs during the entire year. A committee was appointed to attend the Council and urge the passage of the ordinance.

The Work of the Milk Commission.—Mrs. Mary R. Plummer gave an outline of the work that this

Commission is doing before the Chicago Medical Society, Nov. 11, 1903. She referred to certified and inspected grades of milk, saying that there is no compulsory examination of cows unless there is complaint. Farmers who desire to furnish pure milk to the community do not object to having their cows and dairies inspected. She mentioned five farms which are under the inspection of the Commission. These farms furnish either certified or inspected milk. The inspectors of the Commission make periodical inspections and examinations of the dairies and cows of these farms, and if any one farm is not up to the standard exacted by the Commission, the inspector offers suggestions for improvement. Before milking the udders are wiped off, the milkman is compelled to have his hands thoroughly clean; the milk pail is thoroughly cleaned, and the first milk is discarded, because it is thought bacteria gather in it.

The Relative Importance to the Community of Pneumonia and Tuberculosis.—Dr. Arnold C. Klebs read a paper on this subject before the Chicago Medical Society, November 11, in which he drew the following conclusions: (1) That the relative economic importance of pneumonia and tuberculosis cannot be estimated by a mere comparison of total mortality figures for each disease. (2) That the high mortality figure and its increase of late, for pneumonia is produced by the enormous death-rate and its increase, attributed to this disease, in early childhood. (3) That, therefore, the high mortality from pneumonia and to a certain extent its increase is due to a classification of different ill-defined pathologic conditions under one name, while that from tuberculosis represents that of a well-defined morbid entity. (4) That for this reason and on account of the relative shortness of disabling sickness and frequent recovery in pneumonia, the great length of disabling sickness and infrequent recovery in tuberculosis, the relative importance of the two diseases is so vastly different, that a comparison on economic grounds reveals the overpowering danger from tuberculosis. (5) That the steady decrease of the tuberculosis death-rate can be explained on the grounds of increasing improvement of hygienic conditions in late years and as the result of specific prophylactic measures. (6) That the increase of the pneumonia death-rate occurring in a time of improving hygienic and sanitary conditions and of a general application of antiseptic principles, shows its independence of these features. (7) That, therefore, and in view of the still enormous mortality from tuberculosis, its demonstrated preventability and the possibility of its arrest only in its earliest stages, the institution of educational measures in regard to personal and public hygiene widely and specifically applied, for the prevention of this disease, seems to be distinctly indicated. (8) That since for pneumonia, as pointed out by E. F. Wells, "the fundamental information on which prophylactic rules may be formulated is not yet at hand" this subject needs further investigation from a bacteriological and epidemiological standpoint as well, before "exaggerated and irrational notions in regard to its dangers and its avoidance" are communicated to the public, which in view of the facts given are out of all proportion.

CANADA.

Appointments.—Dr. J. C. Mitchell, assistant physician at the Toronto Asylum for the Insane, has been appointed by the Ontario Government medical superintendent of the new Epileptic Hospital now in course of erection at Woodstock, Ontario. Dr. Mitchell is popular with the Ontario medical profession having been last year President of the Ontario Medical Association. He has been granted four months' leave of absence to visit similar institutions in the United States and Great Britain. Dr. M. O. Klotz of Ottawa, has been nominated by the Faculty of Medicine of McGill University for the appointment as Governor's Fellow in Pathology. Dr. Klotz is a graduate of Toronto University, and for some time past has been conducting experiments in bacteriology at the Ottawa Isolation Hospital. The appointment will be officially made at the next meeting of the Board of Governors.

Montreal General Hospital.—The following is the report of the Montreal General Hospital for the month of October: There were 250 admissions to the wards; 220 discharged; 12 deaths. In the outdoor departments there were 2,532 consultations, the largest number for any one day being 200. The number of ambulance calls for the month was 124. The typhoid fever cases have decreased to 24.

Toronto's Fine and Excellent Water.—That Toronto as a city has the purest supply of water of any city on the American continent is evidenced in the reports of the Medical Health Department on analyses made since July 11 last. On that date an analysis showed that there were 300 colonies per c.c. Most of the examinations made between that date and November 3 registered lower than 500. Only once did an examination register over 1,000. Ten years ago it was a common thing to have 20,000 colonies of bacteria per centimeter. The change is due no doubt to a new steel conduit and a new settling basin.

Ottawa Medico-chirurgical Society.—This society, which is the result of the amalgamation of the two old medical societies of Ottawa, held its first regular meeting on the evening of November 5, when the president, Dr. H. B. Small, delivered the first presidential address under the new order of things medically at the Capital. His address, which was very highly appreciated, referred to earlier medical history of the Capital, or Bytown, as it was formerly called. The society will meet the first and third Thursdays of each month. Sir James Grant, M.D., is the Hon. President; Dr. H. Beaumont Small, President, and Dr. C. H. Brown, Secretary.

British Columbia Marine Hospital.—Complaints have recently been made with regard to the condition of the Marine Hospital at Victoria, B. C., a hospital which by the terms of federation with the Dominion of Canada, the central government at Ottawa was bound to keep up and maintain in proper condition. The Victoria Board of Trade appointed a special committee to look into these complaints, with the result that the commission shows that the Canadian Government has sadly neglected the institution. Apparently the institution owes the Dominion Government nothing, but is in fact a money-maker. During the past five years ending June 30, 1901, the last returns which are available, $18,973.78 was paid for hospital dues by vessels entering at Victoria, while the amount expended during these five years upon the Marine Hospital was only $9,541.63, leaving a profit of $9,432.63.

British Columbia Medical Society.—The fourth annual meeting of the British Columbia Medical Society took place at Victoria, on October 30 and 31, with Dr. O. M. Jones of that city as president. A considerable number of physicians from the neighboring State of Washington was present and joined heartily in the various discussions. The president, in his annual address, dwelt upon raising the stand-

ard of medical education and that all should join in maintaining the noblest ethics of the profession. Among those who contributed papers were Dr. R. E. Walker of New Westminster, who read a paper on Pulmonary Embolism; Dr. Ernest Hall, Victoria, Deductions from the Study of Pelvic Disease in the Female Insane; Medical Ethics, by Dr. A. P. Proctor, Kamloops; Pathology and Treatment of Tuberculous Kidney, Dr. Eagleson, Seattle. The following were the officers elected: President, Dr. A. P. Proctor, Kamloops; Vice-President, Dr. Boyle, Vancouver; Secretary, Dr. Brydone-Jack, Vancouver.

Dispensary for Consumptives in Toronto.—With the concurrence of the medical profession of the City of Toronto, the National Sanitarium Association has decided to establish a free dispensary for outdoor patients in consumption. There will also be established in connection therewith a Medical Hall or Lecture Room, thus affording students full facilities for seeing and studying the disease in all its phases. The officers of the association also announce that the Free Hospital within five miles of Toronto is rapidly nearing completion. This will have accommodation for 50 patients, and when fully completed will cost $50,000.

GENERAL.

The Plague at Rio de Janeiro.—There were 23 deaths from bubonic plague and 66 fresh cases of the disease here during the past week. There are now 130 plague cases under treatment.

A Dispensary in the Desert.—The sanitary department of the Egyptian Government has received from Sir Ernest Cassel a gift of $100,000 for the purpose of establishing a traveling dispensary, constructed in tent fashion, but equipped with the most modern appliances. This dispensary will be transported to all parts of Egypt, including its most isolated desert places; and it is especially dedicated to ophthalmic work, the donor hoping thus to lessen the ravages of the ocular affections which are so widespread among the poor of Egypt.

Typhoid at Williams?—A disease which in some ways resembles typhoid fever exists among the Williams College students, and ten men are already prostrated with it. The physicians at first seemed to think that it was a form of grip, but they now say that it is a form of fever, although they will not admit it is typhoid.

Threatened Diphtheria Epidemic in New Jersey.—In their fight to prevent the spread of diphtheria in New Brunswick, N. J., the Board of Health of that city now find themselves confronted with a great obstacle. They have been expending money to check the disease and have exhausted their entire appropriation, with no prospects of getting any more money for six months. In the meantime there is a great danger of an epidemic of diphtheria. Already this month thirty-five new cases have been reported, while during the entire month of October there were only a total of five new cases reported at the office of the Health Board.

Warren Triennial Prize—Massachusetts General Hospital.—The Warren Triennial Prize was founded by the late Dr. J. Mason Warren in memory of his father, and his will provides that the accumulated interest of the fund shall be awarded every three years to the best dissertation, considered worthy of a premium, on some subject in Physiology, Surgery, or Pathological Anatomy; the arbitrators being the Physicians and Surgeons of the Massachusetts General Hospital. The subject for competition for the year 1904 is on some special subject in physiology, surgery, or pathology. Dissertations must be legibly written, and must be suitably bound, so as to be easily handled. The name of the writer must be enclosed in a sealed envelope, on which must be written a motto corresponding with one on the accompanying dissertation. Any clew given by the dissertation, or any action on the part of the writer which reveals his name before the award of the prize, will disqualify him from receiving the same. The amount of the prize for the year 1904 will be $500. In case no dissertation is considered sufficiently meritorious, no award will be made. Dissertations will be received until April 14, 1904. A high value will be placed on original work.

Cultivation of Protozoa.—At a meeting of the Kalamazoo Academy of Medicine held on November 3, Dr. F. G. Novy presented the results of work carried on, with the cooperation of Mr. McNeal, in the Hygienic Laboratory of the University of Michigan relative to the cultivation of the *Trypanosome* of Nagana or the Tsetse-fly disease of South America. They have succeeded in cultivating this flagellata, *in vitro*, for the past two months (68 days), through six generations. The fresh active cultures reproduce the disease in animals, modified cultures are without virulence and may possibly serve as vaccines. The method of cultivation is the same as that employed for the cultivation of rat trypanosomes, published in the Vaughan *Festschrift*. The rat and *Nagana trypanosomes* are the first pathogenic protozoa cultivated in pure condition outside of the body.

Yellow Fever in Laredo.—The official yellow fever bulletin last week was as follows: New cases, 20; deaths, 5; total cases to date, 768; total deaths, 77. Three new cases have been discovered at the Gannel coal mines, making the total number there 11. Two deaths from yellow fever occurred at Minera Monday, making a total of 10 deaths there to date.

Report of Texas State Health Officer.—Dr. George R. Tabor, the State health officer, has made the following report on yellow fever in Texas: "Actual conditions in Texas are as follows: About 700 cases, with 60 deaths, in Laredo; 18 cases, 8 deaths in San Antonio, with no cases reported in San Antonio for seven days; 5 cases, 2 deaths in Dewitt County. These are the only places of infection in Texas, and this is a true statement of existing conditions. Two frosts have fallen in Bexar and Dewitt counties. Conditions are favorable in Bexar, and I apprehend no further cases. The cases in Dewitt County are confined to one house, with no other house nearer than one mile. The disease is ended there. Laredo is well quarantined. There is no danger whatever to people coming to Texas, as our quarantine will amply protect other sections of the State."

The Huxley Memorial Lecture.—The fourth annual Huxley memorial lecture of the Anthropological Institute was delivered in the theater of Burlington House, London, by Professor Karl Pearson, F.R.S. The president of the institute, Mr. H. Balfour, occupied the chair. The lecturer's subject was "The Inheritance in Man of Moral and Mental Characters," a subject to which he has devoted many years of close and constant study, and the importance of which, as he observed, from a national point of view can hardly be exaggerated. It was a question of vital importance, he observed, as to how far mental and moral characters were inherited as compared with physical characters. Few denied the inheritance of physique in man, as in animals, but few too applied the results of such acceptance to their own conduct in life. We were agreed that good homes and good schools were essential to national prosperity, but were apt to overlook the possibility that the home standard was itself a product of parental stock, and that the relative gain from education depended to a surprising degree on the raw material. Since the publication of Francis Galton's epoch-making books it was impossible to deny *in toto* the inheritance of mental characters.

But it was necessary to go a stage further and ask for an exact quantitative measure of the inheritance of such characters and a comparison of such measure with its value for the physical characters. Accordingly he had some six or seven years ago set himself that problem, which really resolved itself into three separate investigations—namely, a sufficiently wide inquiry into the actual values of inheritance of the physical characters in man, and this was carried out by the measurement of upwards of 1,000 families; a comparison of the inheritance of the physical characters in man with that of the physical characters in other forms of life; and an inquiry into the inheritance of the mental and moral characters in man. In respect of this last set of investigations children were taken in schools of different sorts all over the country, and the opinions of teachers were asked upon the characters of their pupils in respect of the physical, mental and moral resemblances between brother and brother, sister and sister, and brother and sister. Six thousand circulars were thus sent out to about 200 schools. In respect of physical characters the data included the cephalic index—*i.e.*, ratio of the length to the breadth of the head, the span, color of eye and hair, curliness of hair, athletic power and health. In respect of all these the measure of the fraternal resemblance, indicated by the well-known regression line, was as two to one—that is to say, that if one of the pair exceeded the mean by a certain amount, the other of the pair tended to exceed the mean by half that amount; and similarly in respect of defect from the mean. This was always true for all the physical characters yet worked out in man. Now, seeing there was this surprising uniformity in the inheritance of the measurable physical characters, could these results be extended to psychical characters? Could we—that was the whole problem—get a corresponding regression line of two to one in steepness or slope in respect of mental and moral characters. A very large number of observations made on 1,918 pairs of brothers as to vivacity, assertiveness, introspection, popularity, conscientiousness, temper, probity, handwriting and general ability showed that while the line of regression was one to two or 50 to 100 in respect of physical characters, the smaller number was represented in respect of mental and moral characters by 51; while in respect of a large number of pairs of sisters it was 52, and these two numbers tended to approximate to 50 with an allowance for probable error. Hence there could be small doubt that intelligence or ability followed precisely the same laws of inheritance as general health, and both followed the same laws as cephalic index or any other physical character. There was a true line of regression in each case (.5 or 1 to 2), and it could safely be said that general health in the community was inherited in precisely the same manner as head-measurements or body-lengths. What results followed therefrom? By assuming our normal distribution for the psychical characters, there was found, in addition to self-consistent results, the same degree of resemblance between physical and psychical characters; and that sameness involved something additional—namely, a like inheritance from parents. We inherited our parents' tempers, conscientiousness, shyness and ability, even as we inherited their stature, forearm and span. Again, within broad lines, physical characters were inherited at the same rate in man and the lower forms of life. The irresistible conclusion was that if man's physical characters were inherited even as those of the horse, the greyhound or the water-flea, what reason was there for demanding a special evolution for man's mental and moral side? If the relation of the psychical characters to the physical characters was established, what was its lesson? Simply that geniality and probity and ability might be fostered by home environment and by provision of good schools and well-equipped institutions for research, but that their origin, like health and muscle, was deeper down than those things. They were bred and not created. It was the stock itself that made its home environment, and the education was of small service unless it were applied to an intelligent race of men. Our traders had declared that we were no match for Germans and Americans. There did seem to be a want of intelligence to-day in the British merchant, workman or professional man. The remedy was not in adopting foreign methods of instruction or in the spread of technical education. The reason of the result was that the mentally better stock in the nation was not reproducing itself at the same rate as of old; the less able and the less energetic were more fertile than the better stocks. No scheme of wider or more thorough education would bring up in the scale of intelligence hereditary weakness to the level of hereditary strength. The only remedy, if one were possible at all, was to alter the relative fertility of the good and bad stocks in the community. Grave changes had taken place in relative fertility during the last forty years. He ventured to think that we now stood at the beginning of an epoch that would be marked by a great dearth of ability. We had failed to realize that the psychical characters—the backbone of a state in the modern struggle of nations—were not manufactured by home and school and college; they were bred in the bone, and for the last forty years the intellectual classes of the nation, enervated by wealth or by love of pleasure, or by following an erroneous standard of life, had ceased to give us in due proportion the men wanted to carry on the ever-growing work of our empire, to battle in the fore rank of the ever-intensified struggle of nations. The remedy lay first in getting the intellectual section of our nation to realize that intelligence could be aided and be trained, but that no training or education could create it. It must be bred; that was the broad result flowing from the equality in inheritance of the psychical and the physical characters in man, and that result constituted a problem for statecraft to deal with.—(*Science*).

Death of William M. Warren.—In the death of William M. Warren, which took place last week in Detroit, not only the pharmaceutical, but the medical world has lost a very important figure. It is unquestionably true that Mr. Warren was the mainstay in the firm of Parke, Davis & Co., and through his influence has made the scientific pharmacy of this country what it is to-day.

Obituary.—Dr. McFadden Gaston died at Atlanta, Ga., last week of acute indigestion, aged seventy-nine years. He was prominent during the Civil War as a medical officer in the Confederate service. After the war, from 1865 to 1883, he made his home in Brazil, attaining distinction in his profession there. Since 1883 he had been at the head of the department of surgery in the Southern Medical College.

Dr. Charles Marshall, a prominent physician of Huntingdon, Province of Quebec, Canada, died suddenly of apoplexy at 272 West One Hundred and Seventeenth street, on Friday last. Dr. Marshall had arrived in New York two hours before to make a visit to his relatives here. Mr. Moore met him, and at his home he was served with a light luncheon. The attack of apoplexy followed, and was almost immediately fatal. Dr. Marshall was a graduate of New York University, and practised for several years in the hospitals of Paris and Edinburgh, later settling for practice in Huntingdon, his birthplace. He was a member of the Medical Board of Governors of the Province of Quebec, and was prominent in the Masonic Order.

Dr. Hortense A. Miller died at Bellevue Hospital on

Nov. 9, from illness contracted six years ago while she was nursing yellow fever patients at New Orleans. A descendant of the Earl of Clarendon, Mrs. Miller was born in Boston fifty-one years ago, her father being Eliphalet Hamlin and her mother Katharine Hardy, both well known during their lifetime in Boston. She married Edward Miller, a wealthy Boston man, and traveled about the world with him till he died, eighteen years ago. Then she went to the University of Michigan, at Ann Arbor, where she was graduated as a physician, and afterward gave her services and her money wherever they could do the most good.

Dr. George J. Engelmann, one of the best-known gynecologists in the country, died suddenly November 16, from pneumonia. He was born in St. Louis fifty-five years ago, but had lived in Boston for the past six years. Dr. Engelmann was born in St. Louis July 2, 1847. His father was Dr. George Engelmann, and his mother before her marriage was Dora Horstmann. He was graduated from Washington University in 1867. From 1867 to 1873 he studied medicine at Tübingen, Germany, where he took his degree of M.D., and also at the University of Vienna. During the Franco-Prussian war, 1870-71, Dr. Engelmann practiced surgery. From 1873 to 1895 he pursued his profession in St. Louis. In later years he was in Boston, pursuing his specialty. Dr. Engelmann was an extensive traveler, and was deeply interested in archæological and ethnological researches. His collection of Missouri flints and pottery is now in the Peabody Archæological Museum at Cambridge, Mass. He was a professor in the Post-Graduate School of Medicine in St. Louis and the Missouri Medical College until 1894. He was accorded high honors by his colleagues at international meetings of surgeons in Brussels, Amsterdam and Rome.

SOCIETY PROCEEDINGS.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Stated Meeting, held October 12, 1903.

Dr. Thomas B. Futcher was elected president and Dr. C. P. Emerson secretary for the coming year.

Demonstration of Medical Cases.—Dr. McCrae said he desired to show the pathological specimens of a case which had several admissions to this hospital before death. The patient was a colored man, forty-nine years of age, and was admitted complaining of shortness of breath. Three months before admission he had "caught cold" and was still suffering from cough and pains in the chest. Examination showed a lift of the manubrium and an area of dulness in the chest. A diagnosis of aortic aneurism was made. On his second admission he showed the same symptoms, and examination revealed a large pulsating swelling reaching from the second to the fourth rib and far out to the right from the sternum. There was no pulsation or prominence to the left. Suddenly, however, the fulness one day disappeared from the right and appeared on the left. Ten days later the tumor again moved to the right and the heart apex, which had moved far out toward the axilla, came in again toward the middle line. On the third admission the patient showed signs of adherent pericardium and of aneurism on the left side of the sternum. Shortly after his entrance to the hospital the tumor once more moved to the right, where it remained until death. The specimen from the case is that of an anuerism of the aortic arch one inch above the valve. The portion on the extreme right, which corresponds to the area where the pulsating tumor first appeared, is very thin. The pericardium and lungs are very adherent. There is erosion of the trachea, a second small aneurism on the descending arch and a general diffuse bronchiectasis of the left lung. The thinness of the right wall of the aneurismal sac may explain the peculiar change in the physical signs noted before death. The shifting of the tumor, however, might also be explained by the relation which the aneurism bears to the heart, particularly when it is remembered that the heart apex shifted markedly during life. Pressure of the aneurism on a bronchus, with resulting changes in intrathoracic conditions, might also explain the phenomena. Death was due to rupture of the pericardium. X-ray photographs showed a shifting shadow corresponding to the change in the physical signs.

Demonstration of Surgical Cases.—Dr. Follis exhibited the first patient, a woman, aged forty-five years, who was brought to the hospital with a wound in the right lumbar region caused by a 38-caliber revolver. Her last meal had been taken four hours before admission and she was seen two hours after the accident. Examination showed abdominal rigidity, normal temperature and leucocytosis of 30,000. The abdomen was opened through the right rectus and the cavity found full of bloody fluid and bowel contents. Eleven intestinal and 6 mesenteric perforations were found. Two in the cecum and two in the ileum were closed. The portion of gut containing the 7 remaining perforations was excised and the two bowel ends left in the abdominal wall. Patient reacted well and her condition was good for two weeks, but on account of her failing nutrition (due to the loss of fluid matter through the high fecal fistula) an extraperitoneal lateral anastomosis was done by the elastic ligature method. Patient did well and after six weeks the bowel ends were excised and turned in under cocaine. The second case is a colored boy aged ten years, who was admitted with typical signs of peritonitis and of typhoid fever, including a positive Widal. He was immediately explored and an intestinal perforation found about 25 cm. above the ileocecal valve. The ends of the bowel were brought to the abdominal wall and left there. The patient had a postoperative pneumonia of the right side, developed a large abscess of the right thigh, subsequently suffered acute intestinal obstruction due to the omentum and was sick with the measles for one month. The enterostomy wound was finally closed under cocaine and the patient recovered completely. Enterostomy in general peritonitis with distention is not a new procedure, having been done by Coyen of Paris; and from one of the Vienna clinics we are told that a typhoid perforation should never be closed as a rational avenue for drainage.

Dr. McCrae said that Dr. Follis' second case teaches plainly that a typhoid patient should at least have the chance of an operation even when general peritonitis has fully developed. The statistics of this hospital show that about 33 per cent. of the cases recover with operation.

Ascending Renal Infection, with Special Reference to the Reflux of Urine from the Bladder into the Ureter as an Etiological Factor in its Causation and Maintenance.—This was the text of Dr. Sampson's paper, who said that in radical operation for uterine cancer the question arises, What should be done with the ureter? and to answer this one must understand the pathology of kidney infections. There are three avenues of infection of the kidney. First, the blood vessels. Experiments in dogs, in which the ureter was ligated, have shown that pyonephrosis may develop from the injection of staphylococci into the injured bladder; and hence a hematogenous ascending renal infection is a possibility. The anastomosis between the renal, uterine, ovarian and vesical arteries offers also a chance for blood infection of the kidneys. Organisms may, in

addition, enter through the ureteral artery which connects directly with the renal circulation. Second, the lymphatics. Dr. Sampson's experiments on this point have been negative. Third, the lumen of the ureter. The anatomy of the intravesical portion of the ureter shows that its oblique course through the bladder wall and the prolongation of its anterior lip to form a valve, offer, in the distended bladder, a natural obstacle to the back flow of urine. In a contracted bladder, however, the course of the ureter is less oblique, the ureteral valve is less prominent and the prevention of reflux is due to a puckering of the bladder mucosa. The state of distention or contraction of the bladder changes the ureteral orifice and consequently the chance of a reflux of urine. My experiments and cystoscopic examinations show that the ureter undergoes contraction so long as fluid flows through it and that the ureteral orifice draws back just after the expulsion of the urine stream into the bladder. Infection may reach the kidney by way of the ureter from the following causes: (1) Injury to the ureteral orifice. He has had several clinical cases in which infection has probably taken place in this way. (2) By extension of the inflammatory process from the bladder wall. This is most frequently the case. One of his patients developed a renal infection from a cystitis due to a retention catheter. (3) Motility of organisms. (4) Backflow of urine, which may be caused either by increased bladder pressure or reversed peristalsis. The experiments on this subject are somewhat contradictory, but I believe that urine flows back through the ureter only when there is disease of the ureteral orifice. Experiments, clinical observations and autopsy findings warrant this assertion. His work leads him to believe that indiscriminate hydraulic distention of the bladder for cystitis is a dangerous procedure, and that ureteral catheterization through an infected bladder should not be done. The most rational treatment for cystitis is the formation of an artificial vesicovaginal fistula which rests the bladder and cures the ureteral stricture. A retention catheter is a dangerous instrument, because it may act as a foreign body. A study of the anatomy and pathology of the ureter shows that this tube not only carries urine from the kidneys to the bladder, but is also of value in absolutely preventing flow in the other direction.

Dr. Russel said that Dr. Sampson's work has many practical sides. Cystitis is the bête-noir of gynecology and this paper has told a great deal about its etiology.

Dr. Young said that he reported some experiments as to the presence of the ureteral reflux in the cadaver and in dogs. Many severe cases of cystitis were, at this time, treated on the surgical side of the hospital by the method of distention—after the safety of this procedure had been demonstrated experimentally on dogs. The results were uniformly good—in one case remarkable. In the past six years he has treated many contracted bladders by hydraulic distention without a sign of ureteral reflux and no symptoms of renal infection. In the Musée Guyon, last summer, he found one case of ureteritis in which the orifice of the diseased ureter was wide open and in this case the fluid would unquestionably flow up the ureter, just as Dr. Sampson has demonstrated in two of his patients. In such cases, however, the kidney and ureter are already diseased and in Dr. Young's opinion the upward flow of any antiseptic fluid would cause no additional injury but might be of benefit, being analogous to Dr. Kelly's method of irrigating the pelvis through the renal catheter. He is glad that Dr. Sampson has come to the same conclusions he himself reached and has also taken his stand against the work of several European investigators, who have attempted to show that a ureteral reflux may be present in normal cases. If hydraulic distention is given up, because of rare ureteral disease, a miserable class of unhelped patients is left.

Dr. Hunner said he has seen a case of what was apparently renal infection following closure of vesicovaginal fistula. Possibly in this patient the bladder became distended during sleep and a reflux of urine took place. Another patient of his, with a stricture of the ureter has frequent attacks of renal infection, which always occur at night—possibly for the same reason.

Dr. Sampson said that in the autopsy room in ordinary cases it is, as Dr. Young says, impossible to force urine from the bladder through the ureteral opening, but by hardening the orifice with formalin, thus simulating ureteral disease, he has been able to cause a reflux.

Stated Meeting, held October 26, 1903.

The President, Thomas B. Futcher, in the Chair.

Some Recent Cases of Extra-uterine Pregnancy.—Dr. Cullen said that extra-uterine pregnancy has recently, in the Johns Hopkins Hospital, been more frequent than usual; and probably many cases have in the past been overlooked. The first patient was a woman of thirty years, who was nursing her child and hence gave no menstrual history. The symptoms were pain in the left side, absence of temperature and a palpable mass which was movable. She made a good recovery after operation. The second patient had no symptoms until a sudden collapse and two similar attacks several weeks later. There had been no hemorrhage and no temperature. The pelvis was found full of blood. The third patient showed the classical symptoms of collapse, pallor, distention, hemorrhage and a palpable mass. The fourth and fifth cases were characterized by labor-like pains, and in the last patient of the series the diagnosis was somewhat difficult because she was at the time nursing a ten-months' child, and the mass in the pelvis suggested a myoma. The pathological specimens from these cases showed both extremes of tubal distention.

Dr. Osler said that these cases are often seen at post-mortem and some years back the diagnosis was practically never made, tubal pregnancies being always called pelvic hematoceles.

Dr. Cullen said that careful descriptions of this condition occur in the French literature before 1800, but Lawson Tait was the first to call careful clinical attention to extra-uterine pregnancy.

A Case of Typhoid Arteritis.—This subject was introduced by Dr. W. R. Steiner. The patient was a boy aged nine years. He complained of headache and weakness, but had had no nose bleeds, nausea, vomiting or diarrhea. His temperature was 101.8° F., pulse 100, Widal reaction negative. Rose spots appeared later and the spleen became palpable in three days. On the twenty-second day of the disease the temperature had fallen to 99.2° F. The next day, however, it reached 103.8° F. and there were all the symptoms of a relapse, with marked delirium, but the temperature reached normal on the thirty-ninth day. On the forty-first day numbness and tingling of the right index finger appeared and gradually the pulse diminished in the right radial artery. There were tenderness, hardness and redness along the vessel and the hand was cold and cyanotic. The fever ran a most discouraging course, bronchitis, a relapse and marked emaciation with delirium being the untoward features. The cyanosis of the arm, however, gradually disappeared and thirty-five days after onset of the arteritis the pulse returned in the right brachial and axillary arteries.

Dr. Thayer said that several similar cases have been reported from the Johns Hopkins Hospital. In one patient the left femoral was involved and in another

an arteritis of the middle cerebral artery was found post mortem. One patient, a girl of eight years, suddenly became unconscious and showed rigidity of the neck with a typical syndrome of Weber, since which time she has had attacks of Jacksonian epilepsy pointing to thrombosis of a cerebral artery.

Dr. Futcher said that Keen collected in his monograph 115 cases of arterio thrombosis and 46 cases of subsequent gangrene.

The Treatment of General Infections, with Especial Reference to the Use of Silver Nitrate in Such Cases.—This was Dr. Joseph Hume's subject, who said that the surgical treatment of general infection aims at free drainage, stimulation and increased elimination. The injection of salt solution, the administration of antitoxines and the introduction of antiseptics into the blood illustrate these fundamental principles. It has often been observed that infection causes a rise in the leucocyte count. It, therefore, seemed that possibly an effort artificially to increase the white blood count was indicated. Silver nitrate has this effect and hence it has been used in the treatment of infections. Possibly it does good by destroying the blood corpuscles and setting free antibodies. If so, a new principle in therapeutics has been established, namely the introduction into the blood of a hemolytic agent. In the series of cases here reported one c.c. of a 10-per-cent. solution of silver nitrate was mixed with 1,000 c.c. of water. Of this mixture 500 c.c. was injected intravenously at a temperature of 110° to 115° F. A chill, rise in temperature, marked drop in the leucocytes, followed by profuse sweating were the phenomena observed in all cases. Several characteristic cases were reported. The first was a girl, aged 16 years, suffering from streptococcus infection following an appendectomy. The usual surgical treatment did no good, the patient became extremely toxic, but following two injections of silver nitrate recovered completely. The second was a patient with a large peritoneal abscess, probably a general peritonitis. She was weak and irrational, and became rapidly worse in spite of treatment. The temperature had reached 104° F. Silver nitrate was given three times with the usual subsequent phenomena. After each injection there was some improvement and the patient was finally discharged well. Another case of streptococcus infection, very toxic and delirious, was similarly treated and after the third injection made a perfect recovery. Ten cases of pyogenic infection have been treated by Dr. Hume with silver nitrate. He has had but one death and that from intercurrent infection. No local results have been observed except two cases of mild phlebitis.

Dr. Pancoast said that Dr. Hume's cases had all been given up, so his material was not promising. The destruction of blood is the only result which silver nitrate has in common with salt solution and formalin, hence this may explain the effect of these agents in infections.

Dr. Thayer said that there is nothing in the literature to support the theory that destruction of leucocytes sets free antibodies. The relation between leucocytosis and prognosis was long ago made the basis of treatment by the administration of turpentine in pneumonia. The reappearance of an excess of leucocytes is according to Weigert's law of the tendency of the human body to overproduction. Theoretically it is poor therapeutics to attempt to destroy the blood of a patient whose powers are already being severely drained. Practically this method of treatment has apparently done some good, but very positive experimental evidence is necessary to make it of general use.

Dr. Cole said that it should be remembered that many cases of streptococcus infection recover without treatment. In a series of 49 cases of general infection, 19 from which the streptococcus was isolated, got well; and this summer in the Johns Hopkins Hospital a patient desperately ill with streptococcus infection suddenly began to improve and made a perfect recovery.

Dr. Emerson said that ordinary salt solution, even though not perfectly isotonic, is *not* hemolytic. Hence it does nothing but good to the blood corpuscles. The blood therefore is not laked and the apparent destruction of white blood corpuscles is really only a leucopenia. If blood were actually destroyed by silver nitrate injection restoration would not be so rapid as it has seemed to be in Dr. Hume's cases.

Dr. Reik stated that one of the cases in Dr. Hume's series had come to him first with a general infection following thrombosis of the lateral sinus. Patient was *in extremis* and had been given up, metastatic abscesses having already formed. Improvement and recovery followed the use of silver.

Stated Meeting, held November 2, 1903.

The President, Thomas B. Futcher, in the Chair.

Exhibition of Medical Cases.—Dr. Cole presented three cases of typhoid fever with meningeal symptoms. The first patient showed contraction of the neck and muscular rigidity and typhoid bacilli were isolated from the cord. In the second case lumbar puncture was done with subsequent improvement. From the spinal fluid which was under tension typhoid bacilli were isolated. Later they were obtained from the blood; and, following a furunculosis, staphylococci also appeared in the blood. This is the only case of secondary blood-infection which has occurred during typhoid fever in the Johns Hopkins Hospital. The third patient had a severe attack of typhoid with bronchitic and meningeal symptoms. Typhoid bacilli were isolated from the spinal fluid. Cases of prolonged fever with nervous symptoms should always make one think of typhoid fever and lumbar puncture is indicated.

Dr. MacCallum showed the pathological specimens of the third case reported by Dr. Cole. There was a distinct exudate over the brain and cord. The gall-bladder was distended, covered with exudate, filled with a suspension of typhoid bacilli and in two places had perforated. This feature would seem to indicate that operation in typhoid cholecystitis is indicated.

The Late Effects of Typhoid Fever on the Heart and Blood-vessels.—Dr. Thayer reported the results of his studies made during the past two years on the vascular features of typhoid fever. The acute vascular conditions such as thrombi, etc., are well enough known, but the relation of typhoid to arteriosclerosis has never been fully worked out. Landouzy, however, holds that typhoid fever is next in importance to rheumatism in producing angiocardiac changes. Dr. Thayer had examined 182 patients who had had typhoid fever from one month to eighteen years previously. In 60.4 per cent. the pulse varied from 60 to 90 and in 30 cases it was somewhat irregular. The blood-pressure was in all cases somewhat high, and over 50 per cent. of the cases over twenty years of age showed palpable arteries. A series of observations was made on the blood-pressure of 276 normal individuals and the average was somewhat lower than in patients who had had typhoid fever. In another series of observations in normal individuals the percentage of palpable arteries was also somewhat smaller than in the typhoid cases; 46.4 per cent. of the cases showed cardiac murmurs, 6 patients having mitral insufficiency and one showing the rare condition of aortic functional disease. Eighty-two cases showed reduplication of the second sound and there was one case of mitral stenosis and one of marked arteriosclerosis.

Dr. Emerson reported an analysis of a thousand cases of albuminuria and stated that his study confirmed Dr. Thayer's opinion of the effect of typhoid fever on the arteries. Strange to say, however, the analysis shows that it has not much effect on the kidneys though the opposite would be expected. Dr. Thayer called attention to the fact that albuminuria is almost constant in typhoid fever, but however bad the urine, the clinical symptoms of nephritis are rarely seen.

Dr. Reik reported a new remedy for tinnitus aurium. The origin of this condition has never been clear though it has been supposed to be due to an increase in intra-labyrinthine pressure and resultant stimulation of the auditory nerve. Dr. Reik's experiments on dogs showed that any irritation of the sensory nerve in the ear caused a depressor effect which is contrary to the usual law. These results confirm Dr. Theobald's theory that tinnitus aurium arises from vibrations starting from the blood-vessels. With the idea of raising blood-pressure suprarenal extract was employed by Dr. Reik both locally and internally. Thirty-five cases were reported cured, most of them rapidly, 15 were improved and only one showed any bad effects.

Dr. Burnam showed the pathological specimens of four rather unusual appendices. The first was from a colored woman aged twenty-eight years who had had an abdominal tumor without temperature. And abscess with infiltrated walls formed in the abdominal wall and scrapings from it showed large numbers of the ray fungus. At the second operation the appendix was found to be the cause, death ensued and at autopsy the appendix showed marked submucosal thickening. There were abscesses also in the lungs. An interesting feature of the case was that the leucocytes never rose, though the temperature reached 106° F. A case of primary carcinoma of the tip of the appendix and two cases of primary tuberculosis of the appendix were also shown and Dr. Burnham stated that these cases gave one more reason for the need of early operation, even in chronic appendicitis inasmuch as the appendix in these cases may be the site of some very severe condition.

NORTHWEST MEDICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, held October 6, 1903.

The President, A. C. Buckley, M.D., in the Chair.

Lobar Pneumonia, Delayed Resolution, Recovery. Hemiplegia, Partial Recovery.—This paper was read by Dr. Harry Lowenburg, in which he reported the case of a boy, seven years old, giving a negative family history, with the exception that his father was an alcoholic and that there was some evidence of Bright's disease on the paternal side. His previous personal history was good, excepting that he had suffered from an attack of varicella a few weeks previous to his present illness, which began with fever and general prostration, and the attending physician diagnosed as typhoid, and when he was admitted to the hospital three or four days after the beginning of the attack he had a temperature of 104° F.; pulse 124, and respirations 24. There was the usual phenomena attendant upon marked febrile movement, slightly coated tongue, constipation, restlessness, hyperesthesia and exaggerated reflexes, but physical examination of the lungs, heart, liver and spleen was negative; there was no tympanitis, and no skin eruption and the Widal and diazo reactions were negative. The following day the respirations had increased to 44 and the pulse to 140, and there was complete dulness and vocal resonance and vocal fremitus over the right intrascapular space and over the anterior aspect of the right apex, at which time a diagnosis of acute lobar pneumonia, involving right apex and entire posterior aspect of the right lung, associated with dry pleurisy, was made. At 3 A.M., on the day following his admission, the temperature fell from 104½° to 98⅘°, F., the pulse and respiration remaining at their previous rate, and the temperature rising to 105° F. at 6 P.M. At this time a blood examination showed red blood cells, 3,100,000; white blood cells, 15,000; hemoglobin, 62 per cent. His temperature continued high until about twenty days after his admission, when it fell to normal, and at this time for about three days he had slight hemorrhages from the lungs. A few hours following the fall in temperature there was complete palsy of the right arm and leg and right side of the face in the lower half, although he could open and close his right eye, and there was incontinence of urine and feces. For three weeks his condition remained about the same, although the auscultatory signs of consolidation improved somewhat. Several exploratory punctures were negative and the sputum showed absence of tubercle bacilli. Gradually the pneumonia disappeared, his appetite improved and he was placed on solid diet, and about six weeks after the beginning of the attack was sent to the country in a weak and emaciated condition, still suffering from incontinence of the feces and urine. He was ordered plenty of fresh air, sunshine, electricity, massage, inunctions of blue ointment, and KI, grs. v., and bichloride, gr. ½, t.i.d, and four weeks later he was able to move his arm and leg somewhat, and at the present time, about five months and a half after the commencement of the attack, is able to walk, although showing considerable defect; can raise his arm almost as high as his head; his face still shows some slight effect, although his speech is apparently perfect and his bodily nutrition has improved. There is still drooping of the right shoulder and restricted movement of the right chest, probably due to pleural adhesions. The author felt that the hemiplegia was due to an embolism, probably originating from the resolving lung.

Dr. Luther C. Peter referred to the fact that hemiplegia occurs considerably in the infectious fevers, particularly typhoid, coming on usually during convalescence, when the circulation is exceedingly slow, and being usually due to a thrombosis. In the present case, however, he felt that the sudden onset pointed to an embolism.

Dr. J. Thompson Schell felt that both the symptoms and the sequelæ pointed to embolism.

Dr. M. P. Warmuth reported a case of lobar pneumonia of the right lung, occurring in a child, in which during the last week of the convalescence the child was entirely blind, lasting a week or ten days, after which the symptoms entirely disappeared, the temperature range being similar to that reported by the author. He felt that the case reported was caused by an embolism, and reported a case following diphtheria, in which there was complete paralysis of the right side for six to eight hours, and for the following thirty-six hours the right radial pulse could not be felt, after which, however, it returned.

Dr. A. C. Buckley reported the work of a German observer, who had recorded seven cases of hemiplegia following infectious fevers, excluding pneumonia and scarlet fever, all followed by autopsy and showed no meningitis present, the condition being attributed to change in the blood-vessels.

A Case of Ludwig's Angina.—This paper was read by Dr. C. M. Harris, in which he stated that the disease was generally supposed to be a streptococcus infection about the submaxillary gland and alveolar tissue, beneath the mucous membrane in the floor of the mouth, as a result of which there is cellulitis about the gland

tending to sloughing rather than pus. The symptoms are local discomfort, followed in from two to four days by swelling and pain; pressure causing considerable dysphagia and sometimes salivation and dyspnea. In some cases there is a high temperature and symptoms of septicemia, pyemia, or even gangrene, may be present. The treatment should consist of prompt incision and removal of any gangrenous tissue, followed by the application of carbolic acid and constitutional treatment, as indicated for septicemia. He reported a case in which a patient had gone to a public bath and remained in the water for two to three hours, and the following day complained of some pain in the right ear and some swelling in the right submaxillary region. The symptoms increased and on the third day there was a hard, tense swelling in the submaxillary region about the base of the tongue which was unattended by external redness or any heat. It was difficult to open the mouth and there was a thick coating on the dorsal surface of the tongue and some of the buccal mucous membrane. There was edematous swelling about the frenum and the submaxillary and sublingual ducts were quite prominent. The temperature was 100° F. On the evening of the fourth day the swelling had extended posteriorly, beyond the angle of the jaw, and the pain in the ear was almost intolerable. An opiate was given, under the influence of which the patient passed a comfortable night. On the fifth day the swelling and pain began to diminish and on the seventh day had practically disappeared, the tongue cleared, the mouth could be opened fully, and presented nearly normal appearance. On the ninth day there was a discharge of pus from the affected ear, which continued for about a week, when it ceased and the patient has since enjoyed good health. The constitutional treatment consisted of quarter-grain doses of calomel hourly for eight to ten hours during the first four days of the disease, and local applications of peroxide of hydrogen and other antiseptic solutions.

Dr. Justice Sinexon reported a case of cervical cellulitis, occurring in an engineer, whose run required him to be absent for two days each trip. On the way out one day he noticed that his neck was stiff, and the following day he presented all the symptoms of the "stiff collar" appearance of the neck. He had much difficulty in swallowing and speaking, and the swelling was most marked at the angle of the jaw. He was given one-tenth-grain doses of calomel every hour for four or five days. On the fifth day an incision was made in the floor of the mouth without any result, which, after the application of belladonna ointment, was followed by the discharge of a small amount of pus and the man made a good recovery.

Dr. William L. Pepper referred to the frequency of the occurrence of cellulitis during epidemics of influenza, as well as in cases of peridermitis, which he ascribed to the infection traveling through the glands.

Dr. T. Turner Thomas reported a case in which the incision had been made on about the seventh or eighth day of the disease, followed by hot applications of bichloride. The patient had considerable dyspnea, which increased after the operation, and during a severe attack, a tracheotomy was attempted, but before it was performed the patient died. He felt that the danger in this condition was principally due to the fact that it involved the deep structures, the least resistance being in the direction of the mouth and throat. He recommended the employment of early free incision, and believed that the prognosis was also dependent upon the kind of infection.

Dr. Harris, in closing the discussion, said that there was probably some danger in the conservative treatment, and that radical measures were probably the surest means.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held at the New York Academy of Medicine, October 12, 1903.

The President, Andrew H. Smith, M.D., in the Chair.

Vacation Odds and Ends.—The President, Dr. Smith, gave some observations at the International Medical Congress, at Madrid, and elsewhere in Europe during a trip from which he had just returned.

The Fourteenth International Congress.—The success of the Congress, he said, was all that could have been expected under the existing conditions. In the midst of so many counter-attractions, it was no wonder that science fared rather ill and that the central idea of the meeting was measurably lost sight of, while its festal side assumed undue prominence. A serious obstacle to the success of international gatherings in general was especially accentuated in this. At the Congress held at Rome there were four official languages; at the Madrid Congress Spanish was necessarily added, and as rather more than one-half of all the congressists were Spanish, it followed that three out of every five papers were in that tongue, the least understood by foreigners. It seemed to him that in future the official language would have to be restricted to one or two of those most generally understood, or the whole scheme of international congresses would degenerate into a Babel which would result in its abandonment. At the opening of the Congress 1,681 papers were announced on the official program. These were apportioned among 16 different sections, making an average of 105 to each section. Of course, this meant that by far the greater number could be read by title only, and many did not receive even this scant measure of recognition. Dr. Smith thought it would be better if in the future a strict censorship were exercised by a committee of the best available men, and only a relatively small number of the highest class of papers admitted to a place on the program. At present all papers presented were accepted.

Medical Education in Italy.—The degree of M.D. is conferred by 17 universities and by the Royal Institute of Florence. The course extends over a period of six years, and cannot be shortened by extra diligence and application. A large amount of scientific work is done in the laboratories of the universities, and much of it is of a very high quality. At Rome there are about 650 medical students. The amount of clinical material is very great, but its utilization is at present handicapped by antiquated buildings very imperfectly adapted to teaching purposes, the magnificent new Policlinico being still uncompleted. Rome, formerly considered one of the most unhealthy cities in the world, presents now a death-rate smaller than that of New York. (In 1902, 16.9.) This has been effected (1) by restraining the Tiber between embankments and (2) by increasing the water supply, which comes from an unimpeachable source in the Alban Hills, and at the same time summarily filling in the polluted wells.

The Allgemeine Krankenhaus in Vienna.—This, the largest hospital in the world, with 4,000 beds, comprises a large number of buildings, none of which are modern. Modern requirements have been met as far as possible by alterations and adaptations, but the only possibility of bringing the institution into line with the demands of the day is by demolition and reconstruction. The Vienna Polyclinic, though more modern than the Krankenhaus, seems to American eyes much behind the times; we miss the appearance of neatness and absolute cleanliness to which we are accustomed. In one respect there is a decided lack: the nurses are not trained up to our standard, and the evidences of slovenly work are apparent on every hand. This was more or less true,

indeed, in all the hospitals Dr. Smith has seen in Europe. Nevertheless, as all the world recognizes, excellent work is done in the hospitals and clinics of Vienna. A low valuation of life appears to prevail in the public institutions, and this impressed him particularly at the Polyclinic, where patients and cadavers seemed to be regarded in much the same light as "teaching material." He learned from an American nurse that she was told, in answer to her inquiry, that diphtheria antitoxin was seldom used in the children's hospitals, as it was too expensive.

Finsen's Clinic at Copenhagen.—The building was erected expressly for this purpose about three years ago, and its main feature is the great operating room, in which are 27 tables for the accommodation of patients while undergoing treatment with the Finsen light. These tables are fitted up with every form of adjustment that can make the patient more comfortable during the application, which lasts from an hour to an hour and a half. Prof. Finsen observed that the effect of the rays was greatly increased by expressing the blood from the capillaries of the part operated upon, and this is done by pressure with a convex lens fitted into a ring attached to a handle. Above the lens, and set in the same ring, is a plain glass; between the glass is a space filled with circulating water, to keep the rays comfortably cool. By the use of suitable diaphragms the action is confined to a small space at a time. The treatments are repeated daily, and during them the nurse presses the lens so firmly upon the part as to completely empty the capillaries. As the period of treatment often extends over many weeks, or even months, the patience required is enormous; but for those who endure to the end the reward is usually great, as even the most inveterate and heretofore incurable cases result in a large percentage of cures. Besides the large operating room there are several small rooms, each with a single light, which are used for pay patients. Persons come for treatment from all over the world. Dr. Smith saw a number of patients who are practically well, and also photographs of the same cases at the time treatment was commenced. A large number of cases are of lupus. He asked the chief of clinic in what proportion of these there was an underlying tuberculous element, and was told in probably about 60 or 70 per cent. of the cases.

"Hydrophobia and That Sort of Thing."—This was the title of a paper by Dr. Reynold Webb Wilcox, in which he gave a report of the reputed cases of hydrophobia in the City of New York during 1902 and 1903, and also described a recent visit to the Pasteur Institute in Paris. In June last, he said, at a hearing before a committee of aldermen upon a proposed ordinance concerning the muzzling of dogs, the statement was made that in 1892 and up to that time in 1903 there had been ten deaths from hydrophobia. As the subject was one which commanded but little attention from the physician, he thought it opportune that it should be reinvestigated, so that some definite conclusion might be reached. Doubting the accuracy of the statement referred to, he requested from the Department of Health a list of those who were alleged to have died from hydrophobia during the time specified, with such other data as would enable him to prosecute his inquiry. This request having been courteously granted, he sent to each coroner or physician certifying to the death a letter containing a list of inquiries into the character and history of the case met with. Seven of the ten deaths were coroners' cases. In one of these the patient, a man thirty-two years old, was bitten in the right hand (wound cauterized), and symptoms developed after nine weeks. A post mortem was made, but the report of it is not on file. In another, the patient, a girl of nine years, who had been bitten some months previously, did not show any symptoms until just prior to death, when she developed convulsions, and died in them. There were no symptoms or history of hydrophobia and no evidence that the dog was mad. In a third case the patient, a woman sixty-two years old, was bitten in the right foot about three weeks previously. She took eighteen treatments (Pasteur), later was taken ill, and died after two days. The dog was shot on the same day he did the biting. In the other coroners' cases no evidence was obtainable. Of the three cases which were not coroners' cases, in two there was no conclusive evidence which he could obtain. The remaining case, in which the patient was placed under careful observation and in which the details were given, was the only one, Dr. Wilcox said, whose record needed analysis. The points militating against a diagnosis of hydrophobia were as follows: (1) The development of the symptoms twenty-four days after the bite is decidedly early; (2) leucocytosis can be accounted for as an ante-mortem phenomenon; (3) respiratory spasm is quite as common in tetanus as in various other conditions; (4) the temperature in tetanus, as here, usually remains low until just before death; (5) the mental symptoms are those usually found in tetanus; (6) inoculation experiments are not conclusive unless carried further than is stated. In the absence of more definite information, the diagnosis would more logically be tetanus than that stated. The most that can be claimed for these cases is that the diagnosis of hydrophobia is not proven. In some instances there is no evident reason why that diagnosis was assumed. Having given an account of a visit which he paid to the Pasteur Institute in Paris during the past summer, he gave the statistics of that institution since 1886. During 1902 1,106 persons were treated, of whom three died from hydrophobia. Inasmuch as in one of these the disease declared itself before the end of treatment, this case was excluded from both "persons treated" and "deaths." The deductions he derived from the table were: (1) Evidently the material used is prepared with great care; else in the presence of conditions favorable to sepsis (as observed by Dr. Wilcox at the Institute), more frequent indurations would result. (2) The patients are evidently cautiously selected, and the Institute has profited by the experience of the first three years, when the mortality was quite large.

Anyone reading the various papers on hydrophobia must have been impressed with their sameness, and a few years ago Dr. Wilcox discovered the common source of information or misinformation upon this subject. This was Van Swieten's Commentaries on Boerhaave, the Ziemssen of the eighteenth century, and in a chapter on "The Canine Madness" are to be found every fact and fancy, theory and superstition one is likely to need. He quoted a portion of this and then went on to say, "Having then found the source of information, and in one sense the forbear of the modern treatment of conditions of alleged sequence to dog-bite, may we not hope that less of assumption and more of logic shall enter into future discussions? A healthy skepticism as to the existence of hydrophobia as a nosological entity does not imply a negation of what has been accomplished by antitoxins or attenuated cultures (vaccines), for these have been demonstrated and their results proven. . . . However, the verdict deduced from the present inquisition, as it was from the one which I prosecuted in 1894, must be the Scotch one of "not proven."

A Mad Dog Scare.—Dr. Elmer Lee said he had visited the Pasteur Institute in Paris, as well as the great experimental institute at St. Petersburgh, and he could confirm all that Dr. Wilcox had said. Some years

ago there was a mad dog scare on Staten Island, and the dog, which was said to have bitten five persons, was kept under observation by the Society for the Prevention of Cruelty to Animals until it died, a few days afterward. An autopsy was made on it at the Loomis Laboratory by Dr. H. P. Loomis and Dr. Lee, and its stomach was found to be filled with curled hair from a cushion, which it had chewed in a barn in which it had taken refuge from a crowd of people who were pursuing it. In the heart there were 60 to 70 worms, which were some five to six inches long, and about the thickness of an old-fashioned metallic knitting-needle. Neither the brain nor the spinal cord presented any pathological condition. As a result of the examination they reported that there was present no post-mortem evidence whatever of the existence of rabies. Yet, in spite of this finding, the health authorities declared that the dog had died of rabies, and insisted that the persons bitten should undergo the Pasteur treatment. Personally, Dr. Lee had never seen a case of hydrophobia, and he should like to inquire if any member present had met with a single well-authenticated case.

The Existence of the Disease a Scientific Fact.—Dr. James D. Trask asked if he was to understand that there is no such thing as hydrophobia. He was surprised at the position which appeared to be assumed. He himself had seen and treated hydrophobia, and the existence of the disease as a scientific fact had been so conclusively demonstrated that he could not see how anyone could doubt it.

Hydrophobia at Least More Rare than Generally Supposed.—Dr. R. E. Van Gieson said that if he correctly understood the purport of the paper, the question had not been raised as to the existence of such a disease as hydrophobia. The author, however, did claim, and to a certain extent at least had proved, that hydrophobia does not occur as frequently as is commonly supposed to be the case. From his own experience he could say that he had seen persons treated by the Pasteur method who did not have hydrophobia. We do assert this much, he said, that hydrophobia is decidedly more rare than many would have us believe, and that the public has undoubtedly been misled in this matter. During a general practice extending now over nearly fifty years he himself had never seen a case. He had been called to see cases which were said to be hydrophobia, but which were really not the disease. Of two such cases, one was tetanus. The other was hysteria, and the patient got well. He had met with many instances, however, in which persons were bitten by dogs said to be rabid. He thought we might safely say that there is a disease given by the saliva of the lower animals, yet its symptoms were so irregular and its period of incubation so indefinite that much uncertainty existed regarding it.

Hydrophobia a Real Disease.—The President, Dr. Andrew H. Smith, related two cases he had seen at Bellevue Hospital, which were supposed to be rabies, and also spoke of the death within a period of three or four months, of 24 out of a flock of 48 sheep on a farm, which had been bitten by a rabid dog. It seemed to him that there were only two things which might be mistaken for hydrophobia—namely (1), tetanus, and (2) nervous exhaustion from fright (lyssophobia). As regards tetanus, he did not know of any case of the disease occurring where all signs of traumatism had disappeared for a considerable time. It was unfortunately the case that a dog which had bitten one or more persons was generally killed immediately, instead of being kept shut up under observation. In this way it was often impossible to say whether a dog had rabies or not, and those who had been bitten were thus apt to become the victims of their own terrors. He, therefore, considered it a crime to kill a dog under these considerations, and would have it made a State prison offense. He could not doubt that there was really such a disease as hydrophobia, and repeated instances of it were recorded in medical literature. Children had suffered from it who were too young to be affected with lyssophobia. Again, the inoculation from the medulla of animals and the reinoculation to the third or fourth series seemed to establish its entity on a scientific basis.

Dr. Wilcox, in closing the discussion, said he did not wish to be considered an iconoclast. He had not denied the existence of hydrophobia, and he did not wish any one to go away under that impression. All that he claimed was that as regards his investigation in 1894, when he collected 17 cases, and when he first visited the Pasteur Institute in Paris, and also his present investigation with 10 cases and a second visit to the Pasteur Institute, the verdict was that of "not proven." He himself, while working, in 1882, in a laboratory in Paris had been severely bitten in the finger by a rabid dog, and he bore the scar to this day. The wound had been treated only by ordinary methods, yet he had not developed hydrophobia; and he could give a number of similar instances. As to the presence of worms in the heart of the dog examined after death by Drs. Loomis and Lee, he believed this was quite a common occurrence with dogs. He would like to ask Dr. Ellis if this were not the case. (Dr. Ellis replied that it was.) Dr. Van Gieson, he thought, had stated the case very fairly. As to the inoculation of guinea-pigs and other animals, one series was not conclusive; for it had been shown that various powerful drugs, such as strychnine and atropine, were capable of producing symptoms identical with what is known as dumb rabies, the special manifestation of which was paralysis of the hind legs. To prove anything of scientific worth the inoculations must be carried through successive series. Personally he had seen two cases which had been diagnosed as hydrophobia; yet one of them, in a child, was shown by the autopsy to be a case of tuberculous meningitis, and the other, in which there were multiple abscesses, was undoubtedly one of septicemia. In his analysis of case No. 3 in the paper he had purposely omitted to mention the strongest point against its being an instance of hydrophobia in order to keep this in reserve in case anyone during the discussion should dispute the position which he had taken in regard to it. Van Gehuchten and Nélis maintained that in hydrophobia there was in the spinal and peripheral cervical ganglia, particularly the intervertebral ganglia and the plexiform ganglia of the pneumogastric, a destruction of the larger nerve cells, brought about by the migration of new cells from the capsule; these new cells invading the protoplasm and the nerve cells, and finally occupying the whole capsule. Ravenal and McCarthy claimed that these changes, with the clinical manifestations of hydrophobia, give a rapid and immediate means of diagnosis, but stated that their absence does not exclude hydrophobia. Delafield and Prudden denied that there are any characteristic changes in the disease. Finally, we come to Marinesco, who had demonstrated that the *Bacillus botulismus*, which is found in sausage poisoning, is capable of producing the same changes as those described by Van Gehuchten and Nélis as pathognomonic of hydrophobia. Furthermore, that the toxin developed is closely allied in its pathological results to that met with in diphtheria and tetanus. At present, therefore, Dr. Wilcox said, he thought it could be safely stated that there was no pathological anatomy of hydrophobia. How, then, he asked, could the disease be identified? As to the cases which he had studied, he could only say again that no other conclusion could be reached than that for these cases the finding must be "not proven."

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ORIGINAL ARTICLES.

DIET AND DRUGS IN NEPHRITIS.*

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ALTHOUGH the kidney is comparatively small in size, its blood supply is large and its function important. It has an excreting and probably an internal secreting work to perform. It is a long-suffering organ and has a heavy burden to bear. Its health depends, in a great measure, upon the normal metabolic and depurative work of the liver, upon the state of the genito-urinary tract below the upper opening of the ureter, upon the cutaneous circulation and vasomotor influences, and upon the absence of pressure and traumatism. Disease of the kidney may rapidly lead to destruction of life, or may persist for years without producing symptoms sufficiently marked to attract the patient's attention. On the other hand, the early restoration of function in some of the gravest cases of acute nephritis, and the slow but steady and resistless progress toward a fatal termination of most of the chronic cases impress upon the physician the importance of prompt diagnosis and treatment.

Inasmuch as the fundamental principle in the treatment of all diseased organs is to secure rest, and inasmuch as the work of the kidney is to eliminate certain ingredients of the blood, the retention of which would be injurious, it is essential in the management of nephritis not only to maintain a normal composition of the blood, but at times to so change the quality of the blood as to reduce its excretion products to a minimum. Syphilis, lead poisoning, and other infections or toxic conditions require, in addition, a specific or special treatment.

Since the quality and quantity of food and the use of alcoholic stimulants are acknowledged to be frequent and potent factors in the production of renal diseases, the matter of diet in nephritis is to be esteemed of prime importance. Dieting is not what the patient so often supposes it to be—starvation, but a regulation of food in such a manner as to rest the kidneys and, at the same time, adequately nourish the body. Nor should it be forgotten that a diseased kidney must be fed, and that no injury must be inflicted upon it by withholding what is required for its own vitality and the performance of any function at all. This truth necessitates a distinction in the treatment of acute and of chronic nephritis; in the former of which diseases complete abstinence from food for a while may be of great service, whereas in the other condition the blood must be enriched and the kidney nourished while its work is diminished.

Apart from the views of other observers, my own experience leads me to express the belief that gout and lithemia, in whatever manner produced, are responsible for a large number of cases of nephritis. Those of us who have studied our cases carefully and watched the effect of irritants in the blood or urine cannot escape the conviction that excessively acid urine, excess of solids, and especially the presence of excess of uric acid and calcium oxalate cannot fail, in the long run, to injure the delicate epithelium of the tubules and to stimulate the growth of connective tissue. In treating nephritis, therefore, it follows that a diet which promotes a normal reaction of the urine and prevents the formation of abnormal ingredients is clearly indicated.

Having attempted to lay down general dietetic principles, let us bestow some attention upon special articles of food. I recall a case of which a brother practitioner spoke to me, that of a young child suffering with acute nephritis, drinking a large amount of milk as an exclusive diet, but still losing a decided amount of albumin. I advised a diet of water and carbohydrates for several days, thus reducing to a minimum the amount of urea excreted. The result was prompt improvement. I have recently had under my care a little girl who had scarlet fever a year ago and who subsequently developed nephritis. Intermittent albuminuria persisted after the casts had disappeared. The milk diet adopted by the first physician who treated the case may have been serviceable in the acute stages, but the child was left anemic and the albuminuria was not relieved. I discontinued milk; allowed vegetables and fruits, chicken and eggs in moderation, administered iron, and sent the child to the mountains. At last accounts the albumin had disappeared and the patient was steadily improving. A third case is instructive—that of an elderly woman with a long-standing case of nephritis. I advised a diet mostly of milk. Constipation resulted and the albumin and casts increased. Complete flushing of the rectum and lower bowel caused a marked diminution of the albumin, and practically, a disappearance of the casts. These cases convey their own lessons, and teach that an exclusive milk diet, so often recommended for nephritis may do harm by being abused and furnishing too much urea, by causing constipation and absorption of toxins, by failing to supply the blood with sufficient nourishment, or by setting up lactic or butyric fermentation. The diet should be suited to the case, and a routine diet for all cases is unscientific and should be avoided.

*Read at the meeting of the Medical Society of Virginia, at Roanoke, Sept. 15, 16 and 17, 1903.

On the other hand, we are all familiar with the benefit derived in a large number of cases of nephritis from a diet composed wholly or largely of milk. Abstinence from alcohol, tea, coffee, and cocoa and a partial or complete reduction of sweets and acids, with the use of alkaline waters, rarely fail to produce prompt and beneficial results, especially in acute cases and in the first stages of the chronic cases. Haig claims that gout is not primarily due to excess of acids and sweets, but that these articles do harm by causing acid fermentation engrafted upon preexisting conditions due to excess of proteid food. However this may be, I am convinced that a large number of cases of nephritis, lithemia, gout, oxaluria, and other allied abnormal states, are not cured or held in abeyance merely by cutting off the main articles of food or drink which Haig enumerates as the causes of uricacidemia. It is true that nephritis, once established, changes the composition of the blood and, consequently, of the urine; but it is all the more true that abnormal blood leads to abnormal urine, and that abnormal urine leads to renal disease. My own rule is to so regulate the patient's diet as to maintain a normal urine; and so long as the urine is normal the kidney will, in the large majority of cases, be healthy or show marked improvement. Even secondary causes will under these circumstances be for the most part inoperative. So much for general principles. The careful practitioner will make special adaptations and note his results by repeated urinary examinations.

There is one point regarding nitrogenous food which ought to be emphasized, and that is that fowl, game, fish, and eggs should not be indulged in to excess because the patient has been prohibited the use of butcher's meat. There are cases in which all of the above-mentioned articles have to be cut out of the dietary. The injurious effects of eggs have been recently impressed upon me by the history of one of my cases, a young man who was markedly lithemic and for years had been the subject of an obstinate psoriasis. After months of treatment, large dietetic, he returned to me with samples of urine which showed a specific gravity of 1.036 and contained an abundant precipitate of calcium oxalate. The eggs which he acknowledged having freely eaten were prohibited, and in ten days the urine was in every respect normal.

Although I believe that hygienic measures are of paramount importance in the treatment of nephritis, I am not a skeptic on the subject of drugs. The more we study drugs and become familiar with their physiological action the more should we be convinced of their therapeutic value when intelligently employed. Their action is governed by certain laws which, in a measure, we are supposed to understand; and leaving out idiosyncrasies and unreliable preparations of medicinal agents, we may reasonably expect more or less success from an application of our therapeutics based upon the pathology and the correct diagnosis of the case in hand.

The value of diuretics in acute nephritis when urinary secretion has almost or entirely ceased is a contested point. Theoretically, they may be contra-indicated in many cases, and high authorities advise against them; but theories and the dictum of authorities often wane before facts. I can vividly recall two cases of scarlet fever occurring years ago in my father's family, and followed by severe nephritis and anasarca. The good old family doctor made an acetic extract of iron, so to speak, by dropping rusty nails into vinegar and drenching his patients with the potion. And I shall never forget how busy the attendants were kept carrying off the dropsy, and how rapidly the sick ones recovered. A year or two ago I was called in consultation to a man suffering from acute parenchymatous nephritis. The kidneys had apparently stopped working, and nothing but the profuse diaphoresis maintained by the attending physician saved the patient from fatal uremia. We concluded to give infusion of juniper and bitartrate of potassium. The result was magical; free diuresis set in, and the case rapidly went on to convalescence. Such happy results are often obtainable in chronic cases when the tubules become blocked. Irritating diuretics may do harm, but we are fortunate in possessing many agents which need not be mentioned but which are non-irritating and productive of the greatest benefit. In this connection, it is well to remember that an efficient cholagogue administered before the diuretic or in conjunction with it is a powerful auxiliary in the treatment. Free biliary secretion and open bowels are frequently sufficient to produce a prompt change for the better in the patient's condition.

The usefulness of diaphoretics, particularly in acute cases of nephritis, cannot be questioned. Such remedies as spirits of nitrous ether and solution of ammonium acetate, and others, have their place, but for emergencies pilocarpus stands at the head for efficacy and promptness. Depression, it is true, may accompany its action; but used with caution and in cases of uremia, with a strong and tense pulse, it is capable of changing the condition of the patient from one of imminent danger to one of comparative or complete safety.

I have already referred to the good effects of cholagogues. It is hardly necessary to mention the value of hydragogue cathartics and salines both in acute and chronic cases, and to invoke their aid when dropsy occurs, or when diuretics and diaphoretics are contra-indicated or fail in their action.

Nitroglycerin is oftentimes invaluable. In acute cases of nephritis with high pulse tension and diminished flow of urine its place cannot be easily supplied; while in chronic interstitial cases its influence upon the general and upon the renal circulation is equally pronounced. The tolerance of this drug by many patients is noteworthy. When normal pulse tension fails and the heart-chambers dilate, the resulting passive congestion is to be met with drugs which force the blood

through the kidney. It is here that digitalis is preeminent. In my own experience it has no equal, and there are few patients to whom it cannot in one form or another be safely and successfully administered. Its substitutes, however, may be necessary and are not to be underrated.

Although the measures used in chronic nephritis are more hygienic than medicinal, there are certain drugs, outside of those employed in complications, which serve a good purpose. Among these iron stands preeminent, especially when anemia has set in and the blood-vessels need to be nourished and strengthened. As to the particular preparation of this agent, I confess to a growing confidence in the old tincture of the chloride of our fathers and grandfathers. Much depends upon the dose and its combination with correctives and synergists. Bichloride of mercury, dilute hydrochloric acid and liquor of the chloride of arsenic are valuable auxiliaries, whose action, whether singly or in combination with iron, are oftentimes forcibly demonstrated in interstitial cases. In parenchymatous nephritis, with anemia, dropsy, and deficient urinary excretion, the time-honored Basham's mixture can hardly be dispensed with, as it is both a reliable hematinic and diuretic. It is encouraging to observe pale urine becoming normally colored under the use of iron, this effect being one which I always desire and endeavor to obtain, and which was very noticeable in one of the young children to which reference has been made. When the tincture fails, other preparations of iron can be used with advantage.

In anemic convulsions, no one doubts the efficacy of chloral hydrate and the bromides, but there may be those who would be disinclined to use morphine. For my own part, I do not hesitate to invoke its aid. It is the only drug which in certain cases will put the physician in command of the situation, and the patient is entitled to the relief or alleviation which it secures. I have never had reason to regret, on account of any injurious effects, the use of morphine when circumstances seemed to demand its employment. That it may do harm is undeniable, but unpleasant effects can be prevented by not giving too large a dose. Veratrum viride is a remedy with which my experience is limited, although its virtues as a reducer of pulse tension and an internal bleeder are well established. In acute inflammatory conditions, with a strong pulse, the good results obtained from aconite must not be forgotten.

For the debility which, sooner or later, appears in all cases of subacute or chronic nephritis, recourse must be had to stimulation. The selection of the agent for this purpose requires discrimination. On account of the physiological relation of urea to ammonia, it is questionable whether the salts of ammonium may not, if too long continued, increase the production of urea, a result which is far from desirable when the secreting epithelium of the tubules is partly or wholly destroyed. Under these conditions a fatal termination is not far off; nitrogenous food itself makes the patient worse; and any drug which causes tissue waste or increased formation of urea in the liver is, if possible, to be avoided. Alcohol, so often the first cause of nephritis, may be beneficial, especially in elderly people who are the subjects of gradual degeneration of the kidney. It is best to give it with food. In other cases, however, its regular use as a stimulant cannot fail to react upon the system and intensify the symptoms which it may temporarily appear to relieve. Strychnine may be contra-indicated in excitable states of the nervous centers, but in such conditions the pulse is usually tense or strong, and the drug would not be considered. Many are the times when it can be given with propriety and marked benefit. When the heart fails and the pulse grows soft, thin and frequent, it is a powerful ally of digitalis. Taken all in all it is the best remedy in our possession for weakness and exhaustion of the nervous system, while its combination with the hypophosphites will sometimes produce results unattainable by either drug alone.

In conclusion, it is needless to add that it has not been my purpose to treat the subject exhaustively, nor to discuss fully specific articles of food and specific drugs. On the contrary, my aim has been to call attention to the underlying principles which should be observed in treating nephritis with diet regulation and medicinal agents. The leading drugs have been mentioned in order to illustrate principles, and, with the same idea in view, reference has been made to certain important articles of food. If what has been written will stimulate to a deeper study of the physiological action of drugs and of the metabolism of food products in the body, and lead to a renouncement of that skepticism on the subject of medicinal therapeutics which is growing too common in our ranks, I shall be abundantly rewarded for the privilege of reading this paper.

MASTOID DISEASE AND CEREBELLAR ABSCESS.

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The importance of encephalic pus collections in their relation to the diseases of the temporal bone, in which purulent inflammatory changes play an essential part, can only be estimated by the amount of destruction wrought in the brain tissue and adjacent structures and by the lethal issue resulting in the absence of prompt recognition and surgical relief. While various portions of the brain may be the seat of abscess formation, the temporosphenoidal lobe and cerebellum concern the otologist more than any other portions, as these areas are the most frequent site of secondary infection from the temporal bone. Cerebellar abscesses as far as their primary origin is concerned, may be classed into two groups, those due to infection by way of the labyrinth, through the petrous portion of the temporal bone and a second class in which the infection is derived from the mastoid process. The latter is the form which I desired to consider here.

The location of the pus collection in the cerebellum when derived from the original mastoid focus, is practically more or less constant in the anterior portion of the lateral lobe and on the same side as the area of bone necrosis, although in rare instances, multiple, discrete abscesses have been found on autopsy. Moos records a singular case in which the cerebellar abscess was on the opposite side to the diseased ear and was also associated with a cerebral abscess on the same side as the ear affected. The source of infection if far back in the mastoid process, will produce the brain lesion in the posterior part of the cerebellum, the direction in which the ear disease may be propagated varying as shown by Pitt, with the position of the sulcus for the lateral sinus.

While the groove varies considerably in different cases, in some temporal bones it is found well forward and in very intimate relation with the mastoid cells, so that the presence of a necrotic area in this vicinity, would greatly aid in facilitating the spread of the infection backward toward the cerebellum. For should this slight barrier break through and an extension of the purulent process take place through the inner wall with a circumscribed meningeal infection, this portion of the encephalon will inevitably be the seat of the pus collection. The sigmoid groove thus plays a prominent part in the conveyance of the infection, although the osseous lesion as regards its primary inception is less directly in relation with the abscess cavity than is usually the case with cerebral abscesses.

The thickness of the inner mastoid wall also acts as a restraining factor, particularly in children, the rare occurrence of cerebellar abscess in the very young from this locality, depending as shown by Gruber, upon the fact that the bony material intervening between the mastoid antrum and the cranial cavity, exists in relatively larger amounts in early life, than at a later period. But at any age, should this intervening layer of bone undergo destructive changes as the result of a mastoiditis and the suppurating process convert the sinus into an abscess cavity, the chances are largely in favor of a subsequent cerebellar abscess, provided the patient does not succumb to the sinus phlebitis or infective meningitis. The brain abscess however, does not in all cases necessarily follow the mastoiditis directly, but may arise from an infective sinus thrombosis or an epidural abscess.

The large proportion of the cases of this class not being dependent upon an acute ear affection, as cerebellar abscess from this cause is very rare, but rather from an exacerbation of a chronic or latent focus of infection in the mastoid cells, which has been incited to renewed activity by some recent irritation. Such a case being reported by Kirkland in a boy of sixteen years, where the aural trouble has existed for three years. There was intense pain in the left ear, the temperature was 103° F., the mastoid was swollen and when the latter was opened it was found to contain but a few drops of pus. Severe occipital pain, left optic neuritis, vomiting, giddines and drowsiness with a normal temperature and pulse then ensued and the skull was trephined one inch above the suprameatal wall with a negative result. On the following day the skull was again trephined over the cerebellum and a half dram of foul pus was evacuated, with the ultimate disappearance of the bad symptoms.

In other cases the inner mastoid wall may remain perfectly intact and the infection will travel through the small channels in the bone by way of the minute veins running from the surface of the cerebellum to the lateral sinus and from this location to the mastoid interior. The following case in which the infection was traced directly from the mastoid cells, resulted in a successful termination after operation:

L. G., male, aged thirty years; has had otorrhea of the right side for ten years, but no serious symptoms were complained of until one week before he was first seen, when giddiness and pain over the mastoid region developed. The mastoid was swollen and tender, with bulging of the wall into the canal and usual signs of a chronic otitis were present with a perforation in the posterior inferior segment of the drum membrane. He also complained of a gradual loss of weight and there was facial palsy on the same side as the mastoid disease. Anorexia, constipation and foul breath were also present, with beginning optic neuritis. Vertigo was the most prominent symptom, while nausea and vomiting were also occasionally present. Intense pain was complained of over the occipital region on the right side, with sluggish reaction to light of the dilated right pupil, and the temperature was 97.2° F., while the pulse varied between 60 and 70. Physical weakness was extreme, the gait was staggering, there was weakness of the right arm, exaggerated knee-jerk and the patient lay on the left side.

Cerebellar abscess following mastoid disease was diagnosticated and immediate operation was advised and consented to by the patient. Under ether anesthesia and with the usual aseptic precautions, the mastoid operation was first performed and considerable greenish pus and necrosed tissue was found occupying the mastoid cells, while a minute sinus with a corresponding small area of necrosis, led into the sigmoid groove. This was removed and the sinus was found to be somewhat discolored but otherwise healthy, while the dura was bulging into the wound. The brain membranes were opened and a grooved canula was plunged into the cerebellum, when about half an ounce of fetid pus was evacuated. Introduction of the encephaloscope showed a firm, resisting, limiting membrane. The abscess cavity and mastoid wounds were gently washed out with a 1:5,000 bichlorid solution and a gauze drain inserted. The temperature ran an erratic course for several days, but at the expiration of a week all of the severe symptoms had disappeared. The abscess cavity continued to discharge for two weeks when it ceased

and the patient rapidly made an uninterrupted recovery.

The frequency of cerebellar abscess, as compared with the intracranial complications of mastoid disease, is but small; Barker believing, from his experience, that less than a tenth part of the ordinary complications of aural disease consists of this form of pus collections. While Gradenigo, in a study of 68 cases of mastoiditis, found endocranial complications in 12 and of these but two were cerebellar abscesses. As regards the proportion of cerebellar to cerebral abscesses one may safely say that of all encephalic pus collections of otitic origin, at least 25 per cent. are located in the cerebellum and that the majority of these are in the anterior surface of this portion of the brain, in immediate proximity to the sigmoid groove. Körner, in 100 cases of brain abscess, found the cerebellum alone involved in 32, while in six cases both cerebrum and cerebellum contained a purulent focus. He found twice as many in males as in females and also agreed with the majority of observers that they were more common on the right side. Allport, in 169 cases, found 31 in the cerebellum; Jansen, in 16 otitic brain abscesses found 9 in this locality, a quite unusual experience; while Picque and Ferrier, in 119 instances, found 24 in the cerebellum, 4 in both this locality and the cerebrum and 1 in the peduncle. Barr, in 76 cases, found abscesses 13 times in the cerebellum. In children as before mentioned, it is quite rare in this location, although one may be safe in estimating the percentage here as compared with all encephalic abscesses, at from 15 to 20; the greater development of the pneumatic spaces in the adult, increasing the predisposition to cerebellar abscess as a complication of mastoiditis.

The symptom-complex of cerebellar abscess, while irregular and at times far from characteristic of the lesion present, may in some cases allow of the grouping of the symptoms, so that four stages of the process may be fairly well distinguished. The first commencing with the symptoms signifying the extension of the infection from the mastoid process to the cerebellum and classified as the initial onset of the local infection. This is followed in the majority of cases by an arbitrary second stage characterized by mild discomfort in which the disease remains latent and usually is not recognized. The third stage supervenes at a longer or shorter period of time and the symptom group of this period is characteristic of a severe otitic intracranial infection, sometimes with symptoms pointing to a localized cerebellar abscess, while more frequently, the pus collection is only localized after the parts have been explored by operative procedure. When, however, this stage is not recognized and the intracranial condition is allowed to continue without surgical relief, the fourth or terminal stage of the disease is an essential sequence, manifested by exhaustion, coma and the gradual death of the patient, or by sudden death from rupture of the abscess into some vital portion of the brain axis.

The initial or formative stage of cerebellar abscess, presents no definite signs as regards the localization of the disease, but the usual symptoms present at this time are those of an acute extension of the mastoid suppuration to the intracranial contents and are usually more characteristic of a sinus thrombosis or a localized area of meningitis, than of a cerebellar affection. A temperature that is already high as a result of the preexisting mastoiditis, becomes a degree or more so, the pain over the mastoid region becomes more severe and may extend back over the occipital region, while vomiting may occur once or twice and then disapper or the symptoms may increase in severity and operative interference be indicated on account of the associated morbid pathology. In a large majority of the reported cases, however, the onset of the intracranial complication, if acute, as here described, was unnoticed, or the infection was gradual, probably covering a period of many weeks or months and passing into the second or latent stage, with a subsidence of any of the acute symptoms that might have been present.

Even more so than in the first stage are the symptoms at this time indefinite and often not of sufficient prominence to attract attention to the aural disease as the cause of the gradual failing in health, with frequent periods of intense headache, varying anorexia, more or less depressed mental condition and fairly well marked aprosexia. If a thorough examination were made at this time, an intracranial lesion at least would be suspected, but unfortunately such is not the case and if the patient seeks advice at all, he is usually treated for some vague general condition and an opportunity is lost, which cannot be regained. Such a case came under my indirect observation, several years ago, in a young man of twenty years. He had been in previous good health except for a suppurating right otitis which discharged at irregular intervals, but not enough to cause him any concern. Then the mastoid became painful and swollen, but under local medical treatment by his family physician, soon disappeared and nothing further was thought of it. It was noticed, however, that he gradually began to lose weight, to complain of frequent occipital headache and to have attacks of nausea and vomiting. His mental condition became dull and he would deliberate in answering even a simple question for several minutes before he gave a reply. This continued for several months, during which time he was taking medicine for a supposed gastritis and finally the symptoms enumerated became so marked, that he was referred to a hospital for a further study of his condition. Seventy-two hours later he died from a large cerebellar abscess which had ruptured into the ventricle, as shown by autopsy.

The third stage like that of the others, of course presents no fixed boundary lines, the transition from one to the other being gradual and usually not recognizable, but for purposes of study, these cases admit of some differentiation of symptom

groups with their pathologic stages. At this time the full complement of symptoms have become well developed, and, according to v. Bergmann, can again be profitably subdivided into three groups: the general symptoms; those due to pressure and local pathologic changes; and the localizing symptoms.

Of the general symptoms, physical weakness usually becomes more pronounced as the abscess develops and the muscular asthenia is especially marked on the same side as the pus collection, being chiefly confined to the arm. The muscular weakness may also be evident by the conjugate deviation of the eyes toward the unaffected side, from asthenia of the ocular muscles and not from direct special nerve involvement. This muscular atony, whether local or general, develops most insidiously and may be the first symptom noted; its importance in connection with other symptoms being considerable as indicative of a brain abscess. A gradual impairment of the appetite, sometimes amounting to complete anorexia, may also be present, but in conjunction with a coated tongue and a peculiar yellow color of the skin, is indicative only, like the majority of the symptoms, of a septic intracranial condition and like those present in many grave diseases, is dependent upon the gradual absorption of septic material and its resultant action on the general organism.

The symptoms due to pressure and local pathological changes vary in almost every individual case, but the presence of headache is fairly constant in all, usually being the earliest and most conspicuous symptom. It is occipital in location and while very intense, is increased by pressure or percussion especially over the region of the abscess. Generally constant, at times it is not so severe, but again becomes almost unbearable. Rarely it may involve the frontal region and then of course, greatly interferes with the recognition of the pus collection, but as a rule it is situated in the former position, being duller in character and more limited in extent than that due to other intracranial lesions. Sometimes it may be the only practical symptom of importance for a time, as in a case reported by Heiman, of a man of twenty-four years, with sudden onset of headache increasing in intensity, following the suppression of an aural discharge. No characteristic symptoms were present but in addition to the headache he had some fever and pain in the ear. Death occurred within twenty-four hours after the beginning of the headache and the autopsy showed a ruptured cerebellar abscess in the process vermicularis.

Nausea and vomiting are almost always present but are not necessarily characteristic of cerebellar abscess. In connection with other symptoms and especially with unsteadiness in gait, vomiting may assume more or less of a characteristic aspect and then depends to a great extent on pressure exerted upon the middle lobe of the cerebellum. In connection with dizziness, vomiting has also been of great value in making a diagnosis as shown by Green and Crombie. Vertigo is present in nearly all cases and may be associated with a loss of the sense of equilibrium, the patient presenting a staggering gait. Or in the sitting posture the head may fall forward, then turn towards the unaffected side and continue to move with pendulum-like oscillations, this condition is extremely rare however and in such cases, the vertigo is a prominent symptom, being constantly kept up by the head movements.

The mental functions are usually disturbed and at first somnolence is common, but may be in isolated instances replaced by a condition of sleeplessness, this being the only symptom for which the patient seeks advice. The mental state may often furnish valuable information especially when the patient is irritable at times, while at others he may be inattentive or the hebetude as the disease advances, gradually giving way to stupor. Sluggish cerebration may be quite noticeable and the peculiar condition may exist in which, if a simple question be asked the patient, he will not appear to have heard it and no notice will be taken for a time, then in a few minutes he will begin to answer slowly and deliberately, dwelling carefully on each word as it were, but the final answer will be correct.

The temperature at this stage is of much value as a symptom of brain abscess, but gives no information as regards the site of the pus collection. Oscillations of the temperature are as a rule not present, and it remains fairly constant at or near 99° F. after the initial rise due to the primary extension of the disease to the cerebellum. Very often it is normal or subnormal and when the latter is continuous in connection with an aural lesion, the presence of intracranial abscess may be fairly well assumed. In some cases the diagnosis in great part will hinge on this symptom, a case in point being that seen by Morris, where the low temperature in connection with a subnormal pulse rate, led to the diagnosis of a brain abscess, but precise localization was impossible. The autopsy showing a cerebellar abscess on the same side as the diseased ear. The pulse is also slow, regular and of fair volume and remains unchanged in uncomplicated cases, but it may be normal and occasionally become intermittent. An instructive case in this connection being seen by Schwartze, in which the prominent symptoms were intense, intermittent pain in the occiput, nausea, vomiting, subnormal temperature, irregular pupils and a rapid pulse of 100 to 150. No operation was performed, as the rapid pulse was considered incompatible with a cerebellar abscess, but the necropsy showed an abscess in the right cerebellar hemisphere, with circumscribed leptomeningitis and pachymeningitis interna and the cause of the pulse rate was readily explained by the finding of a chronic endocarditis. Respiration is usually regular, but often slower and more shallow than normal.

Of the minor symptoms of this class, which are variable and may or may not be present in the given case, cervical contracture is one of the most

frequent, the muscles of this region may also present varying degrees of rigidity and from the same cause, clenching of the teeth may occur infrequently. The tongue may be protruded toward the unaffected side, making the speech slow and indistinct, if it be swollen. Rigors occur infrequently, the bowels are constipated and the knee-jerk may be increased on the same side as the brain lesion. Walker reporting a successful case following operation, in which the only characteristic symptom was the increased knee-jerk.

The localizing symptoms are of little value in this affection, although Burnett states that double optic neuritis is likely to be present, because the abscess readily interferes with the circulation of the cavernous sinuses and the ophthalmic veins. Very often this may be the only positive symptom, but again the eye-grounds may remain normal even in fatal cases, as has been shown by Woodward. Hansberg believes that localization of a cerebellar abscess is almost impossible from focal symptoms, but he considers bilateral choked disks as the only sure sign, while Gradenigo states that lesions of the optic papillæ are observed in about one-half of these endocranial complications and they should be carefully sought for, as they are frequently the first and only indication of intracranial involvement. He further states that the papillitis affords no information in regard to the location of the lesion.

Nystagmus and paralysis of the sixth nerve may point to a lesion in this locality, the paralysis of the abducens producing strabismus, as in the cases seen by Barling, one of which had this nerve affected, while both presented horizontal nystagmus. The pupils may vary in size, the more dilated being on the side of the abscess and there may be inability to close the eyelids, with facial paralysis on the same side; this and paralysis of the oculomotor nerve may be the only localizing symptoms. Should facial paralysis occur it will probably be due to pressure of the abscess on the nerve in the pons, but as is frequently the case, a large abscess may be present and yet produce no localizing symptoms. Cerebellar ataxia and vertigo are usually due to lesions of the worm, while if the medulla be affected to a point low enough, the varied paralyses may be unilateral and on the same side as the abscess, if, however, the pons be involved more on the side of the abscess, the paralysis will be apparent on the opposite side. Macewen has well said that in all cases the symptoms of cerebellar abscess "depend upon the level of the pressure," but one may conclude that local symptoms are not usually present unless the abscess develops to the point of invading the middle lobe or the peduncle, when the so-called cerebellar ataxia develops.

The terminal stage is one of gradual death from exhaustion and coma; or sudden, depending upon the direction in which the abscess ruptures. When the pus breaks into the ventricle, the condition changes at once, the temperature rises suddenly to 103° or 105° F., the pulse becomes rapid, respirations are frequent, while there are muscular twitchings, convulsions, coma and death. When, however, the abscess ruptures upon the free surface, a secondary, inflammatory reaction ensues leading to acute purulent leptomeningitis. The temperature becomes high and the pulse rapid and the symptoms of meningitis are fulminating, ending rapidly in the death of the patient.

The complex of symptoms, as seen in cerebellar abscess, is well exemplified in a study made by Green of four cases, in which headache as a prominent symptom was bilateral in two, frontal in one and vertical in one. No occipital headache being present in any of the cases. Paralysis of the abducens occurred in two, of which one was bilateral and one unilateral and on the opposite side from the ear disease. Optic neuritis was seen in only one case. One had general septicemia, while in the others, fever was not apparent at any time. Nystagmus on looking away from the diseased ear was present in but a single case. The abscesses were in the anterior lower portion of the cerebellum on the same side as the ear disease and in all the cases an accurate diagnosis before the operation was impossible. Leucocytosis was found in those in which the examination was made for this phase, but as the author well states, it is found in nearly 80 per cent. of uncomplicated tympanic suppurations and therefore possesses no diagnostic value in this connection.

Hammond, in five cases, based his diagnosis upon the following complex of symptoms which he regards as characteristic, being confirmed by operation or autopsy. Present or previous suppuration in the sinuses adjacent to the brain, rapid loss of flesh and strength, rapid pulse and high temperature for the first seventy-two hours, followed by a decline in the temperature and an increase in the heart action. There is also pronounced flexure of the extremities, progressive dilatation without fixation of the pupils, semi-unconsciousness with uncontrollable restlessness and a peculiar indisposition to obey any requests that may be made. Glycosuria, slow respiration and a tendency to go toward one side are present, while there is also a swinging of the hands toward one side, with an entire absence of paralysis.

The two groups show very well the multiplicity and confusion of symptoms, and it is only by the careful study of the individual case from all sides, that a diagnosis can be made and the value of the symptoms even approximately estimated.

The pathologic changes in the primary bone infection consist of an area of necrosis at the point where the plate of bone separating the sigmoid sinus from the mastoid cells is extremely thin, so that erosion, as shown by Bacon, is apt to be at this point. The bone becomes discolored, softened and granulation tissue develops, while a collection of pus is found either between the sinus and bone, or behind the sinus in the direction of the occipital bone and by means of the small veins or arteries the infection is carried into the cerebellum. Or, as before mentioned, there is a direct contact between the sinus and the cerebellum, by means of the dura. This phase of

the necrosis, as seen in the sigmoid groove, may be of great diagnostic value, as indicating the course of the infection toward the cerebellar region, when an exploratory operation is performed in the absence of definite localizing symptoms.

Wherever the abscess is situated, its development is usually accompanied by that of other intracranial complications, as sinus phlebitis or a small limited area of meningitis, and it is usually single, but they may be multiple and involve the cortex or deeper regions on one of both sides. Even when single, as is more frequent here than in cerebral abscesses, a smaller pus collection may be found in close conjunction with it, or an abscess here may coexist with one in the cerebrum. As the majority of abscesses in this location are chronic in character, they become capsulated by a definite lining membrane, varying in thickness from 1 to 5 mm. and although this acts as a barrier to the further spread of the infection, yet in some instances, this conservative barrier is absent, the abscess being surrounded only by a zone of softened brain substance. Whether encapsulated or not, there is always present the tendency toward greater growth and the size is extremely variable, some containing but a few drops of pus, while from others, three or four ounces may be evacuated, a case in point being seen by Woodward, in which the entire white matter of the left hemisphere of the cerebellum had broken down into an abscess cavity. The pus found in the abscess does not usually differ from that found at the original focus of infection and it may be thick and yellow, or thin, greenish and offensive, at the same time containing particles of broken down cerebellar tissue.

The following case of cerebellar abscess was seen in consultation a short time ago and well shows the difficulty of diagnosis:

M. J., male, age fourteen years, presented the following history. The right ear had been discharging for two years following an attack of la grippe. He had been under treatment more or less constantly for the otitis, with the cessation of the discharge at times, but with its recurrence after attacks of coryza. He has lately complained of occasional dull pain over the mastoid and has become irritable, with, in addition, a considerable loss of weight. The discharge at times would become excessive in amount and the pain in the head would then become greatly aggravated. At the time I first saw him, the pain and restlessness were marked, the mastoid was not swollen, but pressure produced flinching. There was a small perforation low down in the drum, with considerable purulent discharge and a macerated appearance of the canal, but no definite areas of redness or swelling. The temperature was 98.6° F., the pulse 74 and the respiration normal. The middle ear was cleansed and drained with a small gauze wick, an ice bag was placed over the mastoid and sedatives were given internally. He only slept a few minutes at a time during that night and on the following day the symptoms had increased, although the appearance of the parts remained apparently unaltered. No other symptoms than those mentioned were present and the eye-grounds remained unchanged.

Operation was then advised and under ether anesthesia, the mastoid was opened. The cortex was exceedingly dense and no pus was found until the antrum was reached, which contained a few drops of purulent matter. Free communication was established with the tympanic cavity, a small patch of necrosis was removed, the wound was dressed in the usual manner and an improvement in his condition became noticeable in a few hours, the headache ceased and he had a good night's rest. This improvement continued for a week, when he became restless, was constantly annoyed by trivial matters and his temperature, which had been normal, fell to 97.2° F., while the pulse was 64. I then saw him again and found him very irritable, the right pupil was dilated, he complained of the light and the optic papilla was slightly swollen, while he was losing flesh and strength rapidly. The mastoid wound was to all intents normal, but was redressed, and when I saw him on the following day, he was semi-conscious, there was a slight stiffness of the nucha and a diagnosis of brain abscess was made, supposedly located in the cerebellum.

On account of his grave condition, it was deemed best to immediately explore the cerebellum and delay opening the mastoid wound, as it seemed perfectly healthy. A trephine opening was then made in the usual situation over the cerebellar region and when the button of bone was removed the dura was seen to be somewhat inflamed. A small incision was made in the dura and a hollow needle inserted into the lobe of the cerebellum, when, after encountering a dense encapsulating wall, five drams of pus were evacuated. The abscess cavity was washed out, drained and the usual dressings applied. The patient seemed to rally well from the operation, but died twenty-four hours later from apparent asthenia. A partial autopsy only was allowed, but it showed that the sinus was involved and that the infection had reached the cerebellum through the small veins, from a minute purulent and necrotic focus well back on the inner mastoid wall.

Of all the intracranial complications resulting from mastoiditis or other suppurative affections of the organ of hearing, cerebellar abscess is undoubtedly the most difficult to localize. And, as has been shown by Gradenigo, neither optic neuritis, lateral nystagmus, titubation, vertigo, nor rigidity of the nucha are special symptoms. In many cases the location of the lesions one finds in the course of a mastoid operation with symptoms of endocranial abscess such as caries of the sigmoid groove, with thrombosis of the sinus, will be the only indication that the pus collection is probably situated in the cerebellum. In the cases where a diagnosis is made in advance of operation, it is only by the careful study of the complete symptom-complex, as it is almost impossible to do so from focal symptoms alone, and when recognized early it is more often by a process of ex-

clusion, rather than by any definite signs or symptoms.

The difficulties of recognition are also often enhanced by the frequent presence of complicating factors such as pyemia, sinus thrombosis or meningitis. In sinus thrombosis, rigors, high temperature and increased heart action, are almost always present, while in leptomeningitis there is high temperature, rapid pulse and marked irritability of the special senses as predominating symptoms. Heiman believes that if due consideration be given to all the symptoms, an accurate diagnosis can be made in three-fourths of the cases, and while it is not of much value to place reliance upon single symptoms, yet in many cases one can be fairly sure of the presence of a cerebellar abscess, when certain groups of symptoms are studied in relation with one another. Cerebellar abscess may materially lower the temperature in the presence of a complicating sinus thrombosis and when a case of suspected intracranial complication is seen, this factor should be thought of. Achard and Bellanger believe that paralysis of the arm of the affected side with muscular weakness of the legs, exaggerated patellar reflex on the same side and conjugate deviation of the eyeballs toward the unaffected side, are especially indicative of this condition. And, as has been suggested by Church, in this connection, the X-rays may be of service here, the same as they have been of use in cerebellar tumors, but no cases have been recorded as yet of their value in this field.

In the differential diagnosis between temporosphenoidal and cerebellar abscesses, the usual error is to mistake the latter for the former, but the localizing symptoms of cerebral abscess are usually present sooner or later, and if a decision cannot be made, an exploratory operation will be of great help. Examination of the visual field may yield valuable information, but choked disk alone simply indicates an intracranial lesion and is not characteristic of an abscess in this locality and does not explain the nature of the lesion. Grant reports two interesting cases, in one the diagnosis was rendered more difficult by the presence of labyrinthine symptoms, while in the other, both ears were affected and rigors were very prominent, due to other complicating factors. Disease of the labyrinth and semicircular canals may account for some of the symptoms as in a case reported by Bacon, with slow pulse, vertigo, vomiting, deafness, headache, etc. In this case a cerebellar abscess was supposed to be present, but the operation showed caries of the semicircular canals. In Menière's syndrome, the headache is neither so violent, persistent, nor localized, and while in cerebellar abscess the somnolence and stupor may increase as the diseases progresses this is not the case in the former.

Subnormal temperature is often present after influenza or other depressing diseases, but it is usually of short duration and not continuous like that of cerebellar abscess, while rapid emaciation may be due to the same causes, but when, in addition, the temperature is low, and there is constipation, sluggish mental action and localized pains in the head, the diagnosis is strongly in favor of the cerebellar lesion. The cerebellar gait, so-called, while of strong presumptive evidence, may be due to irritation of the auditory nerve or semicircular canals, as has been shown by Starr, and a similar syndrome be produced by defective aural drainage, without the presence of an abscess at all, the symptoms being relieved after the defective drainage has been rectified. Tumors of the cerebellum, such as glioma, tuberculous, etc., may produce symptoms very similar to abscess, but the differentiation can usually be made by the presence of other factors resulting from pressure on surrounding parts.

The early stage of the abscess formation, corresponding to the initial infection from the mastoid, may last only for a day or two, or a week at the utmost, while after these acute, primary symptoms have subsided, it may remain latent for a number of years, being incited to renewed activity by the development of a new inflammation of the original focus of infection. One, and possibly two, extraordinary cases have been reported, in which the abscess spontaneously evacuated through a carious opening in the sigmoid groove, but such a result seems hardly credible and one should never, for a moment, anticipate such a termination. The usual tendency of the abscess, if not operated on, is to cause death by pressure edema of the surrounding parts, or to perforate externally with resulting meningitis; or internally, into the fourth ventricle, with immediate death from cardiac and respiratory paralysis.

While the patient will invariably die without operation, yet the success obtained in this field has been so promising that one is justified in operating as soon as the diagnosis is made, but in some cases one may wait a short time for the development of any symptoms more closely indicating the location of the abscess.

As the only treatment for cerebellar abscess is surgical, the primary focus in the mastoid should, as a rule, first be exposed and the tract of the infection traced, if possible, to its results further back. Bergman states that with a history of ear disease, persistent sleeplessness and a continuous temperature of 99° F., one is justified in opening the cranium, but the otologist may wait for localizing symptoms or until a condition of hebetude is well pronounced, before interfering. The advantages of delay are, that the location of the abscess may be more apparent later on, while the danger to the patient is not materially increased. As pointed out by Bramwell, in cases where the diagnosis is uncertain, the operation adds but little to the risk.

It is always advisable, after cleaning out the mastoid, to expose the sigmoid sinus, while to get at the inner surface of the mastoid, the posterior portion of the bone can be removed until the dura is fully exposed for at least 2 cm. behind the lateral sinus; exploration can then be made in the cerebellum in any direction to the depth of 3½ cm. inside of the lateral sinus. In exploring, in

the absence of a precise diagnosis and in the presence of grave symptoms, it is best not to incise the dura, as the hernia which sometimes follows is a serious complication and should not be incurred, unless in the presence of immediate danger or when the diagnosis is probable. Intervention should, at times, be limited to exploratory puncture and aspiration. Gradenigo in one case by this method, aspirated fragments of cerebellar tissue and excluded a deep abscess, without in any way injuring the patient.

The general routine of procedure in these cases has been well mapped out by Pritchard, and he advises to first open and explore the mastoid cells and antrum. Failing here to find sufficient disease to account for all the symptoms, open the cranium in the groove for the lateral sinus and so obtain access to both the middle and posterior fossa. Then examine the lateral sinus and search for both extra- and intra-dural abscesses. Treat the sinus as indicated by any pathological changes present, and if the sinus is not thrombosed, explore the cerebral substance above and the cerebellum below the level of the horizontal groove of the lateral sinus. If there is an urgent need of operation and the diagnosis is fairly established, the brain cavity may first be opened over the supposed site of the abscess and the mastoid operation performed later. But the aural lesions should receive attention immediately thereafter, or, if the condition of the patient is such that this is impossible, the mastoid should be operated upon subsequently. But it should always be remembered that the aural lesion is the original cause of the brain disease.

When the mastoid is sclerosed or eburnated, or for any reason that will make the ordinary operation inadvisable, the skull may be opened from 5 to 7 cm. back from the edge of the osseous meatus, just below the superior curved line of the occipital bone and on a line drawn from the inferior osseous edge of the orbit to the occipital protuberance. The technic for opening the skull here is the same as in other situations, but the pus in a cerebellar abscess is apt to be so thick that it will frequently not pass through the ordinary needle, and after the dural flap has been raised, it is best to use a large grooved exploring needle. If pus be found, the cerebellum is freely incised with a probe-pointed bistoury and the abscess cavity is evacuated and a proper drain inserted.

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A DISCUSSION OF SOME COMMON FORMS OF LIVER DISTURBANCES.*

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The liver is not only the largest, but from the standpoint of amount and variety of work, it is easily the most important gland of the body. The workings of the delicate and complicated mechanism of the liver cell, to a large degree, still defies the acutest and most refined observations.

It is the great refinery and safeguard of the organism against unassimilable and poisonous substances, where the detritus of metabolism from all the tissues of the body is discharged and prepared for excretion; the laboratory wherein the

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blood is purified, and the worn out hemoglobin molecule, after being robbed of its iron, is cast out, with other débris, as bile and urinary pigments.

It is one of the principal storage rooms of the body, wherein the carbohydrates are transformed and shelved, to be used in the interim of digestion.

While the general pathology of the liver has been well worked out, much of the functional and clinical pathology yet remains within the chrysalis of ignorance. As only the commoner forms of liver disturbances are to be discussed in this connection, mention will only be made of such conditions as are likely to be met by the practitioner in temperate climates.

Hyperemia.—"Congestion of the liver" is a term that has so long been wielded by ignorant pretenders in the practice of medicine that one might be excused in questioning its existence as a real pathological entity.

A noticeable degree of hyperemia of the liver is occasioned by the ingestion of an ordinary meal. Highly spiced foods and alcoholic beverages produce excessive hyperemia. This engorgement, however, soon passes away, unless the dissipation be long continued, in which case structural changes may ensue. More or less congestion of the liver may accompany valvular heart disease.

Two conditions, said by many authorities to produce hyperemia of the liver, viz., sudden suppression of the menses and hemorrhoidal bleeding, both of which probably have very little effect upon the organ. A few days before the menstrual flow begins, the activities of all the organs are augmented. Nervous and vascular tension is increased; the heart's action is increased in strength and rate, and a general vascular turgescence is manifested in all the blood-vessels. The liver is doubtless at this time also hyperemic. As the flow approaches, however, these activities begin to abate, and so continue until near the close of the flow when the minimum is reached. As the amount of blood lost per twenty-four hours averages only from 25 c.c. to 50 c.c., the mere oozing of blood at the menstrual epoch *per se* can have little or no effect upon the blood pressure for the loss is probably compensated for as rapidly as the blood is lost.

The uterine blood-vessels have no direct connection with the portal system, therefore a sudden stoppage of the flow from the uterus could not affect the liver by any damming-up process.

As to hemorrhoidal bleeding, while there is a direct communication between the hemorrhoidal veins and the liver, the first effect produced upon the liver by hemorrhoidal bleeding would be that of anemia, and a sudden checking of the hemorrhage could scarcely do more than set about the normal conditions. In this connection, it will be remembered that hemorrhoids are often the products of portal engorgements, in which instance the liver may be hyperemic during and after the hemorrhage, and a wrong impression may be obtained upon examination after the hemorrhage is checked. The overloaded portal system invites sluggish absorption, the capillaries of the intestines become congested and a general catarrh of the mucous membrane results.

Stagnation of blood in the smaller vessels encourages thrombosis and as a result of infected emboli, suppurative infarcts may occur in the spleen, bowel, stomach or gall-bladder. In the early stages of hyperemia the liver is uniformly enlarged. As the process advances the liver cells atrophy, leucocytes infiltrate the lobule, and foci of fatty degeneration and pigmentation is the ultimate result. The marbled appearance at this stage, has given it the name of "nutmeg liver."

Fatty infiltration and fatty degeneration afford an interesting study for both the pathologist and clinician. It must be remembered that a certain amount of fat is normally found in the liver cells, it being formed from the stored carbohydrates probably by a fat enzyme in the liver, which converts a portion of the glycogen directly into fats, and it is with some difficulty that we are able to distinguish fatty infiltration of morbid nature from that of the normal product.

Moreover, it is not always easy to differentiate fatty degeneration from fatty infiltration. As this, however, is a matter of technic, it will not be indulged in further at this time. Many drugs are known to be productive of fatty degeneration, viz., phosphorus, arsenic, mercury, camphor, chloroform, etc. Phosphorus poisoning, thanks for the stringent measures now enforced in the manufacture of lucifer matches is nowadays rarely a cause. Fatty infiltration is often found in those who gormandize in food and drink and lead sedentary lives. Overfed infants, especially if carbohydrates form the bulk of the diet, are liable to fatty liver. In such cases there is undercombustion of fats and carbohydrates, taken as food.

When large quantities of alcohol are imbibed, the oxygen is used in burning up the excess, and fatty infiltration may result. In this connection it must be remembered that the liver is a fat conservator. The organ, however, has not acquired due credit for this function. Indeed, it has been spoken of as rather a paradoxical fact, that fatty infiltration and degeneration are frequently found in the cachexias, such as tuberculosis, chronic suppurative bone disease, cancer, etc. Much of the fatty infiltration found in these affections, in my opinion, may be a normal conservative process, the fat being merely held in reserve as a final source of energy, and is given up to the system as necessity demands.

So long, however, as the genesis of fat itself, both from a physiological and pathological standpoint remains undetermined, these problems must remain *sub judice*.

Cirrhosis of the Liver.—While many factors seem to be responsible for cirrhosis none will produce the changes met with except they be long continued. Alcohol, for instance, may be taken in large quantities for a considerable period of time, without any apparent harmful effect upon the liver tissues. It is only when it is long continued that pathological changes are manifested.

Changes in all probability do occur, but they are recovered from, and the precicatricial stage averted. Recent investigations have proved that the liver tissue possesses a remarkable capacity for regeneration.

There is reason for the belief that all liver cirrhosis is the result either directly or indirectly of infection. Especially is this true of the biliary or obstructive type. That alcohol and other intoxicants act in a manner to lower the cell resistance cannot be successfully denied, but if it were the specific cause of liver cirrhosis, we would at all times expect to find the disease present in chronic alcoholics, which is by no means borne out. It is well known that the normal liver harbors bacteria, and the avenues by which infection may reach the liver are so many that we may expect to find either bacteria or their toxins quite constantly present in the organ in health and in disease. It is not essential, however, that the propagation of bacteria takes place within the liver, for this process may occur in other organs of the body, but their toxins nevertheless readily reach the circulation and thus are transported to the liver, and in their effort to eliminate or render them harmless the liver cells finally fall martyrs to the system, in whose interest they have been struggling.

Fibrous and connective tissue fills in the gap caused by the broken down cell, and cirrhosis is the result.

In biliary or obstructive cirrhosis the parenchyma of the gland is destroyed as a result of the closure of the excretory canal. Such conditions may follow congenital absence or malformation of the hepatic duct, in which case the toxins are retained in the liver.

Other cases are doubtless due to direct infection and may take place very early in childhood or infancy. According to Lovett Morse (*Medical Record*, September 20, 1902), all forms of cirrhosis met with in the adult also occur in childhood. There are also forms peculiar to childhood. The disease is not common but occurs oftener than is generally supposed. The ordinary forms usually occur between the ages of nine and twelve years. All the etiological factors of adult cirrhosis play a part in the causation of the disease in childhood. Congenital syphilis plays a frequent rôle.

Alcohol is undoubtedly responsible for a large number of cases of childhood cirrhosis. Unsuspecting and ignorant parents who permit their children daily to indulge in the family wine cup, have no realization of the true dangers lying in wait.

That abnormal fermentation in the bowels is responsible for a large percentage of cirrhosis in children as well as in adults there is little doubt. The fact that cirrhosis of the liver has been found in several children of one family would lead to the conclusion that the cause may sometimes lie beyond the natal state. Toxic matter circulating in the blood of the mother undoubtedly may affect the fetus in utero, leading ultimately to liver infection.

But little light has been shed upon the true nature of the pigmentary cirrhoses. Owing to their being so often met with in diabetes, some investigators have sought to establish a connection between them. For a long time the glycogenic function of the liver, as defined by Claude Bernard, remained unquestioned in its entirety. Reasons, however, are now apparent, which demand a slight modification of this theory. This hypothesis assumes that glycogen is stored up in the liver and is given up to the system after being converted into a monosaccharid, whence it was originally obtained. The effect of these transpositions being to maintain a definite percentage of sugar in the blood, any excess of the normal proportion of dextrose circulating in the blood, according to this hypothesis, stimulates the liver cells to convert and store the carbohydrates as glycogen in the liver, and on the other hand, a diminished percentage creates tissue hunger, and causes the insoluble disaccharid to be transformed into the soluble, and in this wise nourishes the system with a definite proportion of carbohydrates.

That these processes actually take place is believed to be true, but it has been further shown that glycogen may be obtained from other sources, and that at least a part of the molecule is converted into fats. This brings us to the part which the liver may play in diabetic affections. Any distubance of the glycogenic function of the liver will permit an excess of dextrose to circulate in the blood. The kidney tolerates only the normal percentage of sugar in the circulation, and when any excess is reached, it is promptly excreted in the urine. Pavey believes that glycogen is converted into proteid, and that the nitrogenous part of the proteid molecule acts as a carrier for it.

He contends that one of the chief functions of glycogen is that of a proteid sparer, and that as a result of this office of the liver cells passing into abeyance, diabetes ensues.

This furnishes a satisfactory explanation of the persistence of sugar in the urine in diabetes, after cutting off all carbohydrates diet. If the proteid molecule is, as some physiological chemists assume it to be, a union of a carbohydrate with a nitrogenous rest, we can readily see how the vitiated metabolism of the liver cell may, by a simple reverse process, set free dextrose from the circulating proteid.

THE BEST METHOD OF DEALING WITH THE STUMP IN APPENDICECTOMY.

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The simplest way, which has proven efficient, must be conceded to be the best. Yet on theoretical grounds many surgeons have found fault with this simple method and have advised the employment of numerous other forms of technic, all of them more or less complicated, several of them

very wasteful of time and some of them distinct sources of additional danger to the patient.

While it is not my intention here to go into the criticism of the other methods, I desire to answer at least two of the objections which have been urged against the ligation and cauterization of the stump.

It has been stated, evidently on theory and not from clinical observation, that when the appendix is ligated mucous surfaces are brought in contact and that inasmuch as mucous membranes will not adhere to each other, the stump thus formed is insecure. Now, as a matter of fact, when a tight ligature is placed around the root of the appendix the mucous lining is crushed and destroyed at the point of constriction. For all practical purposes we may consider that the mucous membrane is cut by the ligature which is held in place by the tough submucous fibrous tissue and the peritoneum. I have shown this to be the fact by observations on vermiform appendices examined immediately after their removal, an additional ligature having been applied before the ablation for the purpose of this study and I have also examined several appendices sectioned longitudinally after hardening them in alcohol. The recent specimens demonstrated clearly not only that the ligature was absolutely secure but that the mucosa had been cleanly cut, although theoretically it had been pulpified by the constricting ligature. In each case the submucous fibrous coat and the peritoneum were uncut and held firmly. The hardened sections confirmed these observations.

In cases in which there is great infiltration of the walls of the appendix with friability it is best to crush bluntly the rigid root of the organ with a clamp or forceps and then apply the ligature to the crushed tissues. If there is complete gangrene at the base of the appendix, this technic, of course, cannot be employed.

Now, as to the second criticism: Certain writers have maintained that adhesions are apt to form with a stump of the kind I have described. This assertion I feel convinced has also been made on insufficient evidence. It has been my fortune to have the opportunity of examining into the postoperative conditions in a number of cases treated by ligation and cauterization. Three cases of fatal peritonitis examined from three to six days after the operation showed adhesions almost everywhere else but *not* at the stump, which could not be found at all. It had been cast off with its ligature and only a smooth cicatrix on the surface of the cecum remained. In a number of other patients upon whom operations for other conditions were undertaken, months or years after the removal of the appendix, most of them for adhesions when peritonitis had existed at the time of the primary operation, the former site of the appendix was marked by a minute smooth white cicatrix. No adhesion was ever found in this location, no matter how numerous they were in other parts of the abdomen. The stump, formed as herein described, is cast off in from three to six days and with it any temporary adhesion which may have formed disappears. It is therefore my belief that the formation of the stump by the method of ligation is the only way in which adhesions at this point may with certainty be avoided.

The cauterization which for many years I have preferred is that by strong carbolic acid. A minute drop of the 95-per-cent. solution is taken up with a closed artery clamp as ink is taken up with a pen and after protecting the surrounding tissues with gauze the acid is thoroughly applied two or three times to the mucous lining of the stump until the little funnel is completely whitened. In from fifteen to thirty seconds the stump may be dropped back into the abdominal cavity with no danger to other structures which may come in contact with it.

This rapid, simple, safe and thoroughly surgical method is warmly recommended to the profession after the satisfactory test of ten years, in many hundred cases.

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CHRONIC VILLOUS ARTHRITIS, WITH SPECIAL REFERENCE TO ITS ETIOLOGY AND PATHOLOGY.

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AND
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OF BOSTON.

(Continued from Page 980.)

Postoperative Treatment.—The postoperative treatment is fully as important as any which has preceded it. Unless there are indications to the contrary, dressings are not disturbed for one week, when the stitches are removed, and passive manipulation is begun at once.

The cases vary considerably with respect to early restriction of motion, and they seem to vary directly in proportion to the size of the bases of the pedicles from which the fringes depend. In other words, the more vascular the pedicle which connects the villus with the general synovial membrane, the more extensive is the denuded surface after the fringe has been excised, and, where there are a number of these broad denuded areas, adhesion seems to be more likely to occur. These adhesions, however, are very slight, and are readily overcome in most patients without an anesthetic, and, when this is necessary, but one, or at most two, manipulations under gas are required.

Passive manipulation by the patient and active manipulation by the physician should be practised daily during the second week. At the end of this time motion is usually restored to ninety or more degrees. It is then safe to allow the patient to begin to bear weight on the leg, and to encourage him to walk, supported somewhat by a crutch or cane and wearing a compression bandage, such as is made from Shaker's flannel. Daily hot and cold douching stimulates the joint, and facilitates its restoration to normal functional activity.

Some soreness and stiffness persists often for

a longer period than this, but, ordinarily, at the end of the second or third week the active treatment of the joint should be practically completed. Subsequent visits are usually unnecessary.

Pathology.—The appearance of these hypertrophied joint fringes ranges within wide limits. The smaller are of a reddish-gray to purplish color, of delicate dendritic appearance, attached to the synovial lining of the joint by an extremely slender and delicate pedicle. They are present in great numbers, presenting a fungus-like appearance over the entire membrane. Their consistency is very soft and yielding, and their vascularity is especially marked.

At the other extreme are the large, irregular, coarsely lobulated, yellowish fatty masses of 4 to 5 cm. in diameter, often glued by constant inflammation to the synovial lining over a wide area, though the original pedicle is generally to be distinguished. These are usually but one or two in number, and occupy the greater part of the joint cavity. More rare are the fatty masses without any trace on inspection or palpation of fibrous tissue, and the masses of hyaline necrotic tissue or of connective tissue infiltrated with bone or cartilage cells. Between these limits are all shapes and sizes, the pedunculated appearance and rich supply of vessels being the most common characteristics.

On section the tissue even in the larger growths is very rarely of a true fatty consistency. There is always a resistance characteristic of the presence of fibrous tissue in some amount, which in a few instances passes into the gritty solid resistance of bone and cartilage.

A microscopic examination of the smaller growths shows the pedicle to be composed of numerous parallel blood vessels imbedded in a mass of small round-celled tissue, with a thin endothelial lining. Following this to the enlarged bulbous end, the periphery of the growth is found to have the same nature. The cortical portion is composed of an endothelial lining, consisting of a single layer of cells, and a connective tissue groundwork infiltrated with the small round cells characteristic of a chronic inflammatory process, often arranged in definite whorls, somewhat resembling a tubercle. But these whorls never contain the characteristic round epithelioid cells, the giant cells, or the necrotic areas, characteristic of tuberculosis. Minute blood-vessels are very numerous. A short distance from the outer border of the fringe, fibrous tissue begins to predominate over the small round cells, and this shortly gives way to adipose tissue of normal appearance, which constitutes the remainder of the growth. This is not pure adipose tissue, however, for at intervals appear striæ and irregular collections of more or less normal connective tissue, associated with blood-vessels. Although usually these bands are definite and stain deeply, yet often they stain but feebly, and show evidence of granular necrosis. The vessels, very numerous throughout, show, especially in the central portions, marked endarteritic changes, and, where the adipose tissue is most abundant, the vessels are very small, and their lumina are very frequently obliterated.

These same appearances hold true even in the largest fatty growths, save that in these cases the peripheral layer of small round cells is much thinner and at times almost entirely absent, while the areas of unbroken fatty tissue tend to increase in extent. Occasionally, and in apparently very chronic cases, the specimen shows a mass of unbroken fatty cells, with no patent blood-vessels, though occasionally traces of their walls which have undergone hyaline necrosis are to be distinguished. Here, too, are found irregular patches of former fibrous tissue which have become hyaline,—a condition which is universal throughout the fringe in rare cases of many years' standing.

Bone and cartilage cells were found in but one case, but here they formed definite areas of large size. In no case were any signs of tuberculosis apparent, nor is there any tendency to the formation of malignant new growths, though instances of the former are plentiful and of the latter not unknown in the literature.

Prognosis.—The question of the prognosis in these cases cannot, we think, be definitely spoken of as yet because of insufficient data on the subject. It must be borne in mind also that, in giving a prognosis, account must be taken of the cause of the villous hypertrophy. The operation cannot be justly condemned as a surgical procedure because a latent general disease has been overlooked by the operator. In the traumatic cases, and those due to faulty weight-bearing, there is every reason to look for a good result, provided, of course, that in the latter case the defective mechanics are corrected. Neither is it fair to expect or to lead the patient to expect a cure of rheumatoid arthritis to follow the simple removal of large masses of fringes from the knee-joints. In this and allied diseases causing villous arthritis the most that can be held out by way of encouragement to the patient is the hope that, by improving the function of a large joint whose integrity is vitally concerned in promoting the individual's general welfare, the individual may put himself in a position the better to overcome the diathesis. In many cases this can be accomplished, in others it cannot. So far as the cases here reported can afford any basis for a prognosis, bearing the before-mentioned circumstances in mind, and remembering the comparatively short time which has elapsed since the date of operation on the first of the series, it seems fair to claim that in the traumatic cases the prognosis is very good, whereas in the diathetic cases it is impossible to obtain very brilliant results. The long standing cases are apt to suffer from a condition of marked joint relaxation, which requires some after treatment tending to the strengthening of the muscles and shrinking up of the capsule; and this takes time. In one of our cases, where the fringes had developed directly beneath the patellar tendon, they had attained such size as to crowd the tendon forward and pre-

vent its coming perfectly straight in extension of the leg. This patient has had some difficulty in recovering complete voluntary extension, apparently because of this elongation of the patellar tendon. Abbott, in a recent article, speaks of a paralysis of the quadriceps extensor which has not been observed in our cases.

REVIEW OF LITERATURE.

The following represents the reports of cases reported by various authors.

Pathological text-books deal very lightly with the subject.

Ziegler presents an illustration of the museum specimen of lipoma arborescens described by Stieda.

Billroth mentions the fatty development in synovial fringes of joints, the so-called lipoma arborescens, as being a very rare condition.

Coplin believes the condition to be a step farther than cloudy swelling in the process of fatty degeneration. He considers it as developing in subserous or subsynovial tissue and pushing its way into neighboring cavities.

Delafield and Prudden refer to lipoma arborescens as a tuft of synovial membrane pushing into the joint, while by Hektoen-Riesmann the old theory is advanced that these growths are signs of some underlying cause, as tuberculosis, or osteo-arthritis.

Goetz, writing in 1798, was the first to describe the condition. He spoke of numerous thread-shaped and hydatidiform processes springing from the inner aspect of the synovial membrane of the knee-joint. They were rich in fat, suspended by slender threads, covered with a thin membrane. The larger ones had enlarged saccular ends filled with lymph. These fringes floated in the joint fluid suspended by their stalks.

Johann Müller, in 1838, first gave the name of lipoma arborescens to pendulous fatty processes hanging about the synovial fringes of chronically inflamed joints.

Solly, 1848, reported removal of several small bodies from elbow-joint of a man of fifty-nine years. First palpated nine months before, preceded and followed by distinct rheumatic attacks with inflammation and limitation of motion. On examination by Rainey these tabs were found to be enclosed in a membrane of fibrocellular tissue mixed with granular matter, while the central portion consisted of fibrocartilage and osseous tissue. They were attached to the synovia by pedicles and were very vascular, consisting of capillary sacculi and secondary sacculi without capillaries. He believed them to be products of disease of the synovial membrane, but of the exact nature of their formation he was in doubt.

Volkmann, in 1865, referring to lipoma arborescens, as being hypertrophied synovial fringes which had undergone fatty degeneration (sometimes cartilaginous), gave an illustration of the knee-joint specimen in the Anat. Museum of Halle, to which J. Müller first applied the term, and which was originally described by Goetz.

Simon, in 1865, reported a case of arthrotomy in an adult male for painful swelling and attacks of sharp pain on using knee. A large joint body could be palpated on inner aspect of joint. At operation this was found to be attached by a very vascular broad pedicle to the synovia of outer side of joint. The growth was removed and a normal functional knee was the result. The growth was 5 x 1.5 cm., smooth, bright red, and covered with prolongation of synovial epithelium, consisting of fibrous tissue with areas which had undergone fatty change, while the whole showed involvement by a sarcomatous process of the giant cell type. He considered it a hypertrophied synovial fringe which had become sarcomatous.

Volkmann, in 1873, reports the case of a sixty-three-year-old man with beginning arthritis deformans with symptoms of one and one-half years standing. Growth excised, found to be pedunculated, size of cherry, in outer side of joint, near upper part of patella. Growth fatty, perhaps developing from a fringe. General condition grew worse.

Boyer, in 1877, reported an autopsy in which there was considerable thickening of the synovial membrane of the right knee, its surface entirely covered by a large lipoma arborescens. In addition there were numerous pedunculated fringes, many of which contained cartilage and bone cells. A similar but less marked condition existed in the left knee. The joint surfaces of tibia and femur were eroded and osteophytes were present. In life knee had been stiff for some time.

Riedel, in 1878, reported two cases of solitary lipoma in knee-joint. Both occurred in young adult women, the first of nine months' duration following severe strain to knee, the second of thirteen weeks, no cause given. The results of excision were excellent. The specimen from the first knee consisted of a flat mass of fatty tissue lying lateral to the patellar tendon, attached to joint wall by stalk passing under and across front of joint. The second consisted of a walnut-sized body of firm consistency. The prolongation extended upward between fibers of the quadriceps. Both specimens consisted of pure fat tissue with a thick covering of cellular tissue.

Patterson, in 1879, reported a case of partial lameness and disability of eighteen months' duration following strain of knee in lifting. The body, which was palpable, was found at operation to be the size of a bean, lobulated and composed of cellular tissue, attached to the synovial membrane by a short pedicle, and associated with a small amount of synovial fluid. Healing uneventful; result not given.

Danzel, in 1879, reported a case of removal of a bean-sized hypertrophied fringe in the knee-joint of a healthy middle-aged woman. The symptoms were pain, locking, and weakness of joint. The body was palpable at intervals, was found at operation associated with clear, straw-colored fluid in joint and attached by a long pedicle to the synovial membrane, and was removed with an excellent functional result.

Godlee, in 1881, reported the case of a woman, with a swollen, painful, and tender knee, of eight years' duration, in which a large movable body was palpable. At operation this was found to be a pedunculated mass, 1¼ x ¾ of an inch in extent, attached to the synovial membrane. Microscopically it was fibrocellular in structure, appeared to be covered with smooth synovial membrane, and the opinion was "hazarded" that it was an inflammatory thickening of a normal synovial villus.

In 1882, in a discussion following a report by See of a case of chronic arthritis treated successfully by iodoform injections, Lannelongue contended that tuberculosis was not the cause of all cases of fungous arthritis, but that some were undoubtedly rheumatic in their origin, and that there were probably other clinical varieties.

Barwell, in his article on the joints in the Internat. Cycl. of Surgery, 1884, referring to movable joint bodies, mentions one group, taking its origin in the hypertrophied fringes of the synovia. These growths are dendritic in appearance, often containing cartilage cells, and nodular formations, and sometimes become loose bodies, due to the breaking of their slender stalks. In this group he includes lipoma aborescens and single and multiple lipomata of similar origin.

Lauenstein, 1884, reported two cases of solitary lipoma in the knee joint. The first in a girl of seventeen, the onset occurring three years after an operation on the lower end of femur. For a year the knee had been swollen, painful, locking at intervals, with marked disability resulting. A mass was palpable above and to the outside of the patella. This was found attached to the anterior aspect of end of femur, and was removed. It was a fatty mass, 3.5x2x1 cm. in dimensions. Recovery uneventful, with perfect function of knee in about a year.

The second was in the case of an adult operated on for uniting the fragments of a patella fractured a second time. The joint capsule was found torn and joint was opened. Sanguineous fluid escaped, and in lower portion of joint behind the patellar tendon was found a fatty mass connected with the lig. cruciata and the intercondylar fossa through a synovial tear. It was very vascular. It was removed and patella fragments united. A functional knee with flexion to a right angle resulted.

He believed that the condition results from the tearing of the synovia by strain or blow and the entry of subserous fat into the joint.

Weir, in 1886, reported three cases of hypertrophied synovial fringes removed from knee-joints. All were without known cause in healthy young to middle-aged adults, and had persisted from one to three years. All were associated with swelling, tenderness, weakness, pain, or locking of joint. On removal they were found to be fatty, yellow-pink, irregular masses, very vascular, and from 1 to 3 cm. in diameter, attached to the synovial membrane by pedicles. Histologically the first showed chronic inflammatory condition with fatty and fibrous changes, while the other two had undergone sarcomatous transformation. In the first case sepsis intervened and amputation was resorted to with success, in the other two good functional result and absence of symptoms were obtained, without recurrence in the second case for at least two years.

König, writing in 1886, expressed the belief that lipoma arborescens was the result of a chronic inflammatory condition of which tuberculosis was the primary cause. This he did not consider a true lipoma, but he considered that a true papillary lipoma of the joint did exist which he saw in old cases of arthritis deformans.

Schmolck, in 1886, reported two cases of twelve and fifteen years' standing, with swelling and pain. On opening the first, numbers of dark to yellowish-red fringe-like bodies were exposed, of varying shapes and sizes, one large bundle being attached to the synovia by a broad base some 5 cm. in diameter. The second at operation showed the synovia thrown into deep dark red folds and covered with hundreds of hypertrophied fringes. Microscopic examination showed fresh miliary tuberculous process in both, evidently superimposed on the chronic condition. Schmolck contrasted these with several previously reported cases of isolated liponata of joints, but was not positive as to the truth of the theory advanced by König and Riedel, that these solitary forms were subserous in origin, as contrasted with the lipoma arborescens of Müller, which was simply a condition of hypertrophied fringes.

Haumann, in 1887, reported a case in a man with a rheumatoid history of eighteen years' duration. On opening the joint large outgrowths, resembling bunches of grapes, were found attached to the synovia and composed of ordinary fatty tissue, which he considered to be hypertrophied joint fringes. No tuberculosis present. He believed the condition to be the result of a chronic inflammatory condition, as arthritis deformans, or joint syphilis. He considered that the condition favored the invasion of tuberculosis.

Sutton, in 1888, reported on two dissection specimens of joints, the first of a shoulder-joint in a case of chronic osteo-arthritis, which showed attached to the margins of the glenoid fossa numerous pedunculated processes, varying from simple villous fringes to pedunculated masses of fat. The second was from a femoral condyle of a specimen in the Royal College of Surgeons Museum, showing a similar condition. He believed the condition to be simply a fatty degeneration of the villous fringes so frequently seen in osteo-arthritis (rheumatoid arthritis).

Shattock, 1888, reported a case of pedunculated body removed from knee-joint. It was attached to synovial membrane, was white, blotched with red, 3.2 x 7 cm., in a thin connective tissue capsule. Histologically it consisted of a faintly staining meshwork of nebulous granular substance with patches of pigment, simulating true fibrous tissue. He considered it the product of an old hemorrhage into the alar ligament.

Bazy, in 1890, reported the case of an adult male with an enormously swollen knee, the arc of motion much restricted. At operation numerous fatty polypoid growths, purple to yellowish in color, associated with a few osteophytes on the femoral condyles, and considerable clear fluid and fibrin flakes. Healing uneventful and result not given. The specimen was a typical lipoma arborescens, the periphery composed of small round cells interspersed with many vessels, the central portion cellular adipose tissue with large vacuoles, and islands of granular material. No evidence of tuberculosis. He believed the condition to be of a chronic inflammatory nature.

Patterson, in 1890, referred to lipomata arborescentia of joints as the hyperplastic increase and subsequent fatty degeneration of normal villi of the synovial membrane, as distinguished from the pure lipomatous bodies in the joint which originate from the subsynovial fatty tissues. He considered that the loose fibrous bodies found in joints were originally hypertrophied villi which had become detached.

Israel, as quoted by Stieda, reported a case of swelling and pain in knee dating from a trauma six months previous. At operation he found the richly-vascular, fat-infiltrated, hypertrophied synovial fringes, the type of lipoma aborescens. No sign of tuberculosis. Excellent functional result.

Robson, in 1891, reported case of a sailor who had an intermittently painful knee, much swollen, following a trauma two years previously. No foreign body was palpable. Associated with much straw-colored fluid he found three pedunculated masses, the largest the size of a hen's egg, irregular, lobulated, fibrous in character, with a covering of synovial membrane. These were removed and a perfectly functioning painless knee resulted. He considered it a genuine fibrous polyp, originating in deeper synovial layers, and not an hypertrophied synovial fringe, which, though occasionally pedunculated, would seldom attain such a size.

Modunski, in 1891, reported a case of a tuberculous patient with swelling of knees of ten years' standing. In both knees were found typical lipomata arborescentia, infiltrated with caseous tubercles, while in one knee there was erosion of the cartilage. No microscopical examination.

Blachian, in 1893, reported a case of painful swelling of left knee, with limitation of motion, these attacks occurring at definite intervals of a few days with almost complete disappearance of symptoms between attacks. The condition was without known cause, but occurred five years previously in connection with an acute arthritic attack in shoulder, which disappeared under salicylates. It had become so severe as to seriously incapacitate patient. On opening the knee a small amount of clear fluid escaped, and a large number of fringes appeared, which took their origin from the synovial membrane. These were removed and a perfectly functioning painless knee resulted.

The outgrowths were typical synovial fringes, lymphoid and fibrous tissue predominating in the smaller, while the larger ones, consisting of fat cells, in a meshwork of fibrous tissue. They were all very vascular, and enclosed in an endothelial covering. He considered them typical examples of lipoma arborescens, taking their origin in the synovial membrane, not from deep tissue driven into joint; that in some cases tuberculosis might complicate the process without being its cause, and that the condition could result from trauma only if hemorrhage into joint occurred at the time. In this connection he cited a case reported by Brockelmann, in which a boy with a hemophilic tendency was operated on for acute hemarthrosis and died shortly after. At autopsy the synovial tabs of both knees showed marked hyperplasia, with brown patches of pigment, the starting point of a future chronic villous hypertrophy.

Dor, in 1893, cited a case of lipoma arborescens in the shoulder-joint of a man of forty-one years, suffering from arthritis deformans. From this he cultivated *Staphylococcus pyogenes albus* and a gelatine liquefying organism. From this he concludes that certain forms of arthritis deformans are of infectious origin, and that these organisms are the cause of the accompanying villous hypertrophy.

Le Bec, in 1893, reported a case in the knee of a girl of thirteen, following a fall with ensuing synovitis four years previously. Pain and swelling resisted conservative treatment, a palpable mass persisting. At operation he removed a mass of brown-red fringes two to six cm. in length, attached by pedicles to the synovial membrane, which were demonstrated microscopically to be of a purely fatty nature.

Schüller, writing in 1893, states that he found synovial fringes of varying size in normal joints, never, however, developed to such a degree as to be palpable externally, and not in great numbers. He carefully described the anatomy and histology of the enlarged fringes of chronic rheumatoid arthritis and believed that the term lipoma arborescens as applied to these cases should be abandoned as a misnomer, the condition being one of chronic inflammatory hypertrophy and not a new growth.

Riedel, in 1893, examining the knee of a patient in whom a healed periarticular tuberculous process was demonstrated microscopically, found great numbers of hypertrophied synovial fringes of the type of lipoma arborescens without trace of tuberculosis. He believed that there was originally a circumscribed intra-articular tuberculous process which first caused the fringe hypertrophy. He cited a case of removal of fringes from an otherwise normal shoulder-joint, where there was a tuberculous focus in the humeral head. One year later tuberculosis developed in the joint. These cases were first reported in 1891, together with a note on a third case, in which at operation a "fibroma arborescens" of the elbow-joint was found. No trace of tuberculosis was found in this case on microscopical examination. The patient was a girl of seventeen with marked tuber-

culous glands of the neck. He noted that the condition may develop in the wake of a tuberculosis, arthritis deformans, simple serous arthritis, or any chronic inflammatory condition of a joint.

Sokoloff, in 1893, reported two cases of chronic swollen painful joints in adults, the first of two and one-half years duration in the knee, the second of recent date in the elbow. In the first arthrectomy done with good results, in the second erosion with death from sepsis. In both were found typical hypertrophied fringes of small size in great numbers, with tuberculous infiltration of the tissue in the first. Sokoloff was of the opinion that tuberculosis was responsible for the condition in both cases, though found only in one. In a second article, published in 1893, he offered another etiological factor in fringe hypertrophy. He referred to the recent work of O. Hagenhorn and Schüller, who showed the presence of synovial fringes of small size in certain portions of all normal joints, and the developmental atrophy of these fringes in parts of the joints subject to pressure from the articular bony surfaces. Thus, when the intra-articular pressure was least, the fringe development was greatest. In this connection he reported two cases, one operative and one anatomical, of old non-reduced dislocations of femoral head. In both cases there was marked hypertrophic condition of the synovial fringes in the upper outer portion of the joint capsule, which was much dilated, and which was without function. These fringes were most abundant and had undergone extensive fatty degeneration.

Sokoloff believed that any pathological diminution of the normal pressure conditions was sufficient to cause this hypertrophy of normal elements, without any additional inflammatory process.

Vibrac and Faquet, in 1894, reported a case in which arthrotomy of knee was performed for relief of symptoms of foreign body in joint, following trauma two years previous. A typical lipoma arborescens and some free osteophytes were found, the former believed to be the result of the irritation of these foreign bodies. In the discussion M. Anchi referred to a case of coxafemoral arthropathy with numerous fatty synovial fringes. Some were terminated by fibrous nodosities, which were hard and infiltrated with cartilage cells, while others had become detached.

Stieda, in 1896, reported two cases, the first an operative case which dated from an injury to the knee several years previous. Resection of the joint was done with good results. The second was a museum specimen, a hip involved by arthritis deformans, which showed a marked lipoma arborescens. Microscopically, the periphery of the growths was composed of small round cells, and the central portion of adipose tissue interspersed with fibrous bands. Throughout were very numerous vessels, with thickened walls. He distinguished this condition from that of single or isolated lipomata of joints. These latter he stated to be composed of pure lipomatous tissue, presumably originating in the subsynovial tissue, which entered the joint cavity only through a laceration of the capsule. He believed the lipoma arborescens to be a hypertrophy with fatty degeneration of normal pre-existing tissue, caused by chronic inflammatory condition of whatever etiology, and not peculiar to any one disease. He considered operation, often of a radical nature, the only satisfactory treatment.

Halstead, in 1896, writing on floating bodies in the joints, referred to the pathological metamorphosis of normal joint villi and their subsequent detachment from the synovial membranes occurring in arthritis deformans and other forms of joint disease. This condition he distinguished from loose cartilage and true foreign bodies in the joint which have brought about a pathological condition in a previously normal joint. He gave as a clinical picture of these conditions sudden locking of joints, usually in extension, a recurring synovitis, at irregular intervals following an acute attack, and crepitation in joint.

Bolton, in 1896, on reviewing the literature, found 720 cases of arthrotomy for foreign body in the joint, and referred to the treatment of cases of the type of lipoma arborescens and hypertrophied fringes. Although he found unsatisfactory results in a large per cent. of these ceses, he nevertheless advised removal, tying of stumps if necessary, drainage only in extensive synovitis, or in severe hemorrhage from manipulation, and postoperative immobilization by splint or plaster.

Schüller, writing in 1900, in elaboration of his article in 1893, advanced the claim of a bacterial etiology of chronic villous arthritis, which he classified as a distinct disease. He took this stand from his observation that a chronic villous arthritis occurred often in the absence of any general disease, such as arthritis deformans. The condition he characterized as an hypertrophy of the fibrous and fatty elements of normal synovial villi, and their subsequent fatty degeneration following a chronic inflammation of the synovia. This inflammation he concluded to be caused by a certain bacillus, which, sometimes associated with a coccus, he found in villi thus affected. This he was able to grow in pure culture, and inoculate into the joints of animals with the subsequent appearance of similar synovial changes, associated with the presence of similar bacilli in the inflamed villi. The coccus he considered unimportant. No further work has been done to substantiate his claim, which appears scarcely conclusive in itself.

Goldthwait, in 1900, drawing conclusions from 38 arthrotomies of the knee-joint, mentioned the fact that in nineteen cases coagula or hypertrophied fringes or folds of synovia were found in the joint. He believed these fringes to be due to a chronic inflammatory condition of the synovia, with increase of blood supply and resultant hypertrophy of the membrane, which was able to expand in one direction only, due to the unyielding nature of the capsule, with the resulting formation of vertical folds. These folds slipped over each other, causing cracking and snapping,

or caught between the articulating bony surfaces, particularly below the patella, with locking of the joint. Trauma of this nature, frequently repeated, tended to perpetuate and increase this inflammatory condition. With prolonged irritation degenerative changes occurred, the fibrous tissue normally found giving way to bone and cartilage or to fatty tissue, especially the latter. Coagula, so frequently found in connection with this condition in the joint, he considered an end result of a former effusion, and believed that acting as a foreign body in the joint it was often the cause of the chronic inflammation. In cases where the condition was due to relaxed joint ligaments, he believed that strapping with resulting prevention of the intermittent trauma often caused the condition to disappear, but in most cases he recommended incision of the joint, excision of the fringes, irrigation with hot water, tight closure and immobilization. Immediately after removal of stitches, bathing, passive motion, and manipulation were to be practised. The prognosis was good in cases where the condition was due to local causes, but where due to an underlying general disease, it varied directly with that of the disease itself.

Abbot, in 1903, reporting 12 cases of hypertrophied fringes, 8 treated by operative measures, considered trauma to be but an occasional cause. He believed it to be the result of some fault in weight-bearing structures of lower extremity, especially a flattened arch, which he had found in all his cases. This led to straining of ligaments of joint, the meeting of articulating surfaces in abnormal positions, and the consequent pinching of normal synovial tabs, with a resulting chronic hypertrophic inflammatory condition. He found very vascular, dendritic, fibrous fringes, rich in cells, and associated with a varying amount of fluid, usually very slight. No micro-organisms, but a simple inflammatory condition. He noted the swelling, locking and pain in joint with frequent loss of function. On examination, no redness or heat. Swelling usually most marked on inside of joint. Movement possible beyond normal limits, lax ligaments, some lateral motion. For conservative treatment he advised hot air, strapping, correction of pronated feet, a brace to limit lateral motion. Immobilization of joint was condemned. The operative treatment consisted in excision of fringes, immobilization in plaster for two weeks, followed by manipulation. The after results are excellent. He found no foreign bodies or torn cartilages in any of his cases.

Conclusions.—1. Chronic villous arthritis is not a disease of itself, as has been claimed by some authors. It occurs associated with chronic diathetic disease which involves other tissues than the synovial membrane of the joints affected, but it is representative in such cases of the same pathological changes which subsequently obtain in the other structures of the joint. The two principal diatheses which cause this are rheumatoid arthritis and osteo-arthritis. The villous changes in these two chronic conditions are to be regarded as symptoms of a general condition, and not as an entity in themselves.

2. Traumatism, entirely apart from any diathesis, is capable of giving rise to an hypertrophy of villi, and this hypertrophy is usually a local one in the part of the membrane directly or indirectly injured. The type commonly goes on to a dense fibrous growth, which keeps the joint in a constant state of injury through its traumatic effects.

Traumatism, associated with an osteo-arthritic diathesis, is frequently the excitant of local synovial hypertrophy; but the synovial changes are apparently more the result of the trauma than of the stirring up of the diathesis.

3. Stout, flabby adults, with pronated or flat feet, are more liable to the type of fringe which undergoes fatty degeneration with a minimum amount of fibrous change. This condition is sometimes associated with pregnancy, the tissue relaxations of nervous prostration, and the "soft" condition of so many rapidly growing and sickly children at the period of puberty.

4. Alteration in the mechanics of weight-bearing is not, as has been recently stated, the prime cause of this condition in many of the knee cases. It is very frequently a contributing factor, and as such should be given its full weight when questions of treatment arise; but it is extremely doubtful if simple flat foot or pronated foot without some more fundamental tissue change can account for this condition.

5. The operative treatment in the properly selected cases gives eminently satisfactory results when undertaken with an understanding as to what the procedure contemplates. Conservative treatment, when carried out properly in suitable cases, which comprise, however, only a small class, gives equally good results. The main thing is to be able to discriminate between the classes.

6. Judging from the pathological findings, the condition is the result of a chronic inflammatory process of whatever cause, which, by acting upon the normal villi of the synovial membrane, causes their hypertrophy, together with a consequent great increase in the number of their blood-vessels. This condition becoming chronic, due to the continuance of the toxic cause or to intermittent and slight trauma, the vessels are unable to supply the needs of the new tissue, affected as they are themselves by the inflammatory process.

The result is their gradual endarteritic obliteration with the almost complete loss of blood supply and the disappearance of the normal fibrous tissue, which either undergoes necrosis and hyaline degeneration, or disappears, leaving in its place tissues which can be nourished by a very limited supply of blood, the adipose being the most common form. In this necrotic condition separation of the pedicle and the formation of a loose joint body can easily occur.

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PRIMARY OSTEOPLASTY IN OPEN FRACTURES OR FRACTURE DISLOCATIONS.

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A WIDE field for osteoplastic procedure is offered in various types of open fractures. To this species of salutary, conservative surgery, we must turn now, as a substitute for primary amputation in a large number of severe traumatisms of the limbs or their appendages.

With the utilization of anesthesia, we may now proceed with deliberation and thoroughness in our examination. With effective hemostasis and surgical cleanliness we may take chances in saving a shattered limb without any disadvantage to our patient; but, moreover, we can preserve and restore many an appendage or limb which before the Lister period had to be sacrificed or retained in a distorted, useless shape.

Immediate Osteoplasty After an Open Fracture.—There are comparatively few extensive mutilations of osseous parts which permit of extensive or precise manipulation of them immediately after injury.

The patient is usually in shock, has lost freely of blood and is in a bad way to endure any tedious procedure under an anesthetic. Moreover, we are not always able at this stage to determine the degree of vitality in the parts mutilated.

There is a small number, nevertheless, which is in such a physical state as to warrant precise treatment at first examination.

After effective hemostasis and cleansing we may quite painlessly effect replacement of the fragments, and so close in the muscular or fibrous structures about them as to aid in their retention. We may remove detached fragments driven into the soft parts or forcibly pressing on the nerve or blood-trunks. If necessary, we may also drill the fragments, rivet or wire or peg them.

Fragments retaining periosteal, muscular or connective-tissue attachments, should be carefully replaced; the torn muscle, tendon or ligament may be sutured with fine gut. An effort should always be made to secure a *dry* and clean wound.

Drainage, by the use of sterile gauze-wick, may be employed when the wound is deep, and there has been extensive laceration; though in some it will be quite enough to leave the integuments freely open, or close them in by a few sutures only, in order to permit of a free escape of the secretions. The limb should then be embalmed in antiseptic dressings, placed in a flexed position and be comfortably supported.

When these cases escape infection, and there is no suppuration, in a sound subject, the primary dressing should not be disturbed for a week or ten days. In vigorous subjects, we may often look for surprising results.

Consecutive Osteoplasty After Open or Complicated Fracture.—The aim and purpose of consecutive osteoplasty are to overcome deformity and restore function. Immediately after many serious fractures, we are unable to estimate what the degree of resulting defect in outline or action of the limb will be.

There has been more or less local devitalization of the parts, hard and soft, and though widespread infection is under control, the dead tissues must be thrown off by sloughing or mortification.

In many open fractures time alone will determine how extensive the loss of tissue will be. Again, the limb may have been so badly crushed, that our energies must be concentrated on an attempt to save the limb in *any form*, the matter of shaping it, being an affair for further consideration.

We have another class of fractures in which consecutive surgery is capable of sometimes effecting superb results. These are cases of closed so-called "simple" fracture, followed by hyperostosis or deflexion of the fragments, with resulting damaging pressure on the nerve trunks, neuralgia, paralysis or hyperesthesia of the limb.

Several illustrative cases of this class have come under my notice; one a fracture of the clavicle with downward pressure of the callus on the brachial plexus; one of callus inclusion of the muscular spiral nerve in humeral fracture; one case of complicated fracture of the elbow and forearm with fusion of both shafts and a dislocated head of the radius; several in fractures of the leg and thigh.

Osteoplasty in Fractures of the Extremities in Close Proximity, or Involving the Articulations.—Osteoplastic resources are frequently useful in

effecting reposition, correcting deformities, relieving nerve pressure or overcoming deformity in various closed fractures, or in dealing with cranial or clavicular fracture, but their great forte is with the open or complicated, of the levers of the extremities.

We should invite no fresh complications by division of the tissues, unless they are already open, as it is with these latter, as a rule, there is the greatest degree of osseous disorganization, displacement and destruction. We may enlarge the wound, possibly effect a reduction, remove all foreign material, embalm the parts and apply supports.

In very serious cases, involving complete destruction at and beyond the site of injury, our aim will be to institute rigorous asepsis and place the mutilated member in such a position as will prevent the needless sacrifice of tissue after the line of demarkation is formed.

In many open fractures, replacement may be easily effected, there may be but little shattering; with these, the less the fragments are manipulated, the better. Bone substance though dense and hard is exquisitely sensitive to the irritation of the atmosphere, to strong chemical solutions or rough handling. Were the bone substance as immune to irritation as the peritoneum, surgery might readily remedy nearly every description of deformity.

The tolerance of bone substance has a definite limit, which when imposed on, resents it by arrest of repair or by necrosis. For this reason, it is obvious that at the time of primary examination, if constitutional and local conditions warrant it, we should institute and complete such simple osteoplastic measures as will favor the transformation of an open into a closed, or simple fracture, with early solid union. Facilities within our reach render this possible at present in the greater number of cases.

Osteoplasty in Infancy and Childhood.—It was my privilege, at a meeting of the American Medical Association, in Atlanta, Ga., in 1896, to submit an essay on the "Special Characters of Fracture in Children and in Early Life."

Every one knows that not only are the anatomical structures of the child widely unlike those of the adult, but that the finer histological elements of the osseous structures are characteristic. The skeleton in childhood is immature, elastic and highly vascular; its evolution is incomplete and hence, when damaged in varying degrees, is capable of the dual property of repair and continued growth at the same time. Nay more, sections of the skeleton in the child are capable of quite complete reproduction, after loss by injury or disease. Moreover, through compensatory agencies, many osseous blemishes and deformities are capable of obliteration during the growth of the body.

When, therefore, in serious fracture, the brunt of violence has fallen on the bone elements and the vital structures of the soft parts have escaped, conservative surgery may accomplish remarkable results. But, the limbs or the appendages of the child are tender, softer and much less resistant to compressed force than the adult's. This we will sometimes unhappily see demonstrated in those disastrous results, from the too firm splinting or tight bandaging after fracture. We will observe it also after such violence as might be safely sustained by the adult limb. The parts after the crush in open fracture of early childhood may readily perish, fail to react, and gangrene may set in early. This applies, it is true, only to extreme cases, but it is more frequent than in the adult from the same degree of force. Besides, the child bears deep shock badly, and mortal symptoms may set in early after the free loss of blood.

In the child, primary osteoplasty may be quite out of the question; but we should not despair or give up hope, unless the limb has been quite entirely destroyed at the time of injury. Hemorrhage must be immediately subdued, the parts swathed, and the little patient resuscitated; then, provided only the circulatory currents become reestablished, we may look for quite complete osseous regeneration.

In the technic of osteoplastic operations on the child, the greatest caution must be observed to preserve every particle of the periosteum possible, for however complex, the process of osteogenic repair may be with the adult, there is abundant evidence that the presence of this membrane is indispensable to osseous regeneration in early life.

Osteosection in childhood, using the heads as an osteoclast, very frequently serves a useful purpose, in strumous or rickety patients in whom union of the fragments is slow or imperfect. In these cases, when the lower limb is involved, the defective callus yields under the weight of the body after locomotion has begun, with a resulting deflection, bowing and shortening of the limb.

MEDICAL PROGRESS.

SURGERY.

Müller's Operation for Spina Ventosa.—Spina ventosa was formerly considered one of the most intractable of the minor surgical complaints and failures were numerous before Müller published his new operation. Briefly this consists in removing the diseased diaphysis with or without periosteum, sponging out the cavity with iodoform solution and then implanting a piece of the ulna with its periosteum, ½ cm. (⅕ inch) broad and 2 to 3 mm. (1/12 inch) thick. It should be long enough to fit accurately into the space between the intact epiphyses. O. Ehrhardt (Münch. med. Woch., Sept. 29, 1903) has tried this method in six cases and finds it extremely simple and efficient. If there is danger of weakening the ulna, the tibia may be employed instead. The after-treatment generally lasts three weeks, though splints must be worn somewhat longer. The presence of fistulæ is no contra-indication but cases of cicatricial shortening are generally unsuitable. The same applies to cases where the epiphyses and joint are already involved.

Aneurism Treated by Matas' Method.—In view of the fact that the German and other European writers

have to date practically neglected to recognize the existence of this admirable American technic, it is of import to note that the method is gradually gaining a foothold. The method is based upon the fact that the endothelial surface of the artery is capable of exhibiting all of the reparative and regenerative reactions which characterize endothelial surfaces in general when subjected to irritation. ROBERT T. MORRIS (Ann. of Surg., Oct., 1903) records a case of fusiform aneurism in the popliteal region, which he successfully treated by this technic. The patient was a strong, robust man, fifty-eight years of age, who had been in the habit of sitting with the right leg over the arm of his chair. No other part of his history had any bearing on the case. Swelling had appeared in the last three or four years in the popliteal region, which had been increased until at the time of the operation the aneurism was so large that its pulsations were visible on both sides of the knee when viewed from the patellar side. The edema had been so severe that the leg had to be tapped in order to allow it to subside; but despite this, the lymphatic tension was very high. This made ligation of the femoral peculiarly dangerous, and was the chief factor in causing the use of the Matas method. The part was prepared with a germicidal depilatory a few minutes before the operation. This method avoids the need of shaving and simplifies the process of establishing asepsis. The incision was 10 inches long and was carried longitudinally through the wall of the sac of the aneurism. A double handful of clots was removed from the sac, and the aneurism shown to be fusiform with a large, thin-walled diverticulum, which constituted the chief part of the mass. A running suture was passed through the deepest part of the sac so as to construct something more than three inches of a new artery of a caliber estimated to be similar to that of the popliteal, and a second row was introduced for purposes of strength. The elastic bandage was next removed and immediately the new artery began to beat. There was no leakage. The patient's foot was warm, but there was no pulsation in the arteries to be felt on account of the edema. The wound was closed without drainage and it healed completely by primary union. The anesthesia and loss of power which had been present, shortly disappeared, sensation being well defined by the seventh day. On the twenty-second day at the site of the aneurism the newly constructed artery could be felt. The restoration of function was satisfactory.

Irrigation of Biliary Passages.—F. KUHN (Münch. med. Woch., Sept. 29, 1903) warmly recommends injecting water under moderate pressure through the biliary passages at every operation for cholelithiasis. Besides ascertaining that the passages are free, one can by the addition of suitable drugs, directly medicate the diseased mucous membrane, force out mucus and small stones and exert a beneficial massage upon the tissues. The method is not risky, yet sometimes moderate attacks of colic will follow. If a pressure corresponding to 500 mm. of water is used, 25 c.c. per half minute, indicates an obstruction; 25 to 50 c.c. is normal and 50 to 100 c.c. signifies dilatation. Large stones wedged in the common duct will not be influenced but smaller calculi and sand will be expelled as effectually as after an attack of colic. All cases should be irrigated systematically after operation, to avoid recurrence.

Acute Inflammation of the Cecum.—Among 350 cases operated for appendicitis, D. REISINGER (Münch. med. Woch., Oct. 6, 1903) found the appendix normal in two though all typical symptoms had been present. They must be looked upon as instances of primary, gangrenous typhlitis, the existence of which some authors are inclined to doubt. Constipation played a prominent part in only one but it is probably the most important factor in setting up ulceration and gangrene in the cecum. The relatively little movable ascending colon will push up and compress the transverse portion so that overdistention and anemia will follow. This will naturally be most marked in the cecum where the walls are thinner and less resistant. As the feces are converted into scybalous masses, direct irritation and injury of the mucosa results. The posterior wall is especially endangered since free from peritoneum. The correct diagnosis can only be made at operation since typhlitis and epityphlitis are clinically alike.

Surgical Treatment of Lung Abscess.—Pulmonary surgery has advanced very rapidly owing to the fact that so many lung affections are not improved by internal treatment and since the tolerance of the lung toward knife and cautery is really very great. The number of successful operations in apparently hopeless cases has been large, but the celebrated specialist in lung-surgery, KAREWSKI (Münch. med. Woch., Sept. 29, and Oct. 6, 1903) warns against taking too enthusiastic a view. In the case of abscess especially, it is absolutely necessary to localize accurately the lesion and also to take its etiology into consideration for a number of forms are not suited for operative procedure. Then also, a large number of abscesses heal spontaneously and this applies especially to the metapneumonic form. Though but few lobar pneumonias are followed by abscess, the author found that 5 out of 14 were preceded by a true pneumonia. Abscesses secondary to influenza pneumonia are unsatisfactory both from a medical and surgical point of view and rarely heal spontaneously, since there are generally multiple foci which do not communicate with a bronchus, so that the pus cannot be coughed up. Should it be possible to convert all the small cavities into a large one during operation, the outlook is more favorable, though it may take a year before suppuration ceases. The chronic lung abscess of advanced age will hardly ever call for operation. Foreign body abscesses generally have thickened walls and lead to bronchiectasiæ. Every attempt should be made to remove the foreign body through the bronchi since it can rarely be found at operation and the prognosis in general is not good. Abscesses of this kind have been known to heal spontaneously where the foreign body was expectorated after ten years. The prognosis is also very unfavorable where septic emboli are the cause. A much more favorable outcome can be expected where there is an arrosion of the lung from suppuration in the neighborhood. Perforating hepatic and subphrenic abscesses and cold abscesses secondary to Pott's disease are the most frequent source of this class, while in a few cases softened bronchial glands, gastric ulcer, strumitis with mediastinitis and perinephritis were found. These conditions often run as obscure, chronic sepses until the pus breaks into the lungs, when the patient's condition will suddenly improve. A single, well-circumscribed focus is generally found in the lungs at operation. In all cases in which the pus is not freely evacuated through the bronchi, it is wrong to wait for a spontaneous perforation, since chronic sepsis, brain abscess or recurrent joint inflammation may follow. Before deciding upon an operation, it is important to ascertain if acute or chronic. In the latter, there are often multiple foci with dense, unyielding walls which greatly prolong the process of granulation. The condition of the ribs is of great importance; the ribs of young individuals are more elastic and flexible and readily adapt themselves to changed conditions within the lungs. An apical abscess heals more readily than a basal one since drainage is more perfect both by way of the bronchi and the drainage tube. Since,

however, the lower lobes are more movable, the contents will be more readily expelled and the surrounding organs will tend to fill in the defect and thus hasten cicatrization more readily in this locality. In general, an expectant treatment is admissible in young individuals, with small apical foci or with larger, recent, basal foci. In many cases the abscess tends to progress toward the surface of the lung and many an empyema has been operated and its cause, a lung abscess, detected only later during the after-treatment. Operation should not be deferred until an empyema sets in, since this renders the prognosis much worse. It is not necessary to wait until pleural adhesions have formed; if the operation is conducted in two stages and the lung sutured to the costal pleura with silk saturated in turpentine, during the first act, the surgeon need not fear that he will be the cause of an empyema. A great advantage of early operation lies in the fact that the patients are improved permanently, whereas with internal treatment a recurrence may follow, even after years of latency.

PHYSIOLOGY.

New Researches on Indicanuria.—It has been observed that during the oxidation of indoxyl, there are produced not only indigo-blue, but also red and brown substances. The reseaches of C. Porcher and C. Hervieux (Hoppe-Seyler's Zeitsch., July 31, 1903) show that the rapid oxidation results in indigo-blue, while the slow oxidation results in indigo-red. The authors obtained a positive indigo-reaction in the cases of the urines of horses, dogs, rabbits, guinea-pigs, and also human beings. In their opinion indican is a normal constituent of urine and consequently indicanuria loses in significance as a diagnostic sign.

The Relative Toxicity of Distilled Water, Sugar Solutions, etc., for Marine Organisms.—One need not discuss the possible practical interest or profit which medical science may have in the investigations on the above theme by Jacques Loeb (Pflüger's Archiv, July 8, 1903). He found that for a certain species of *Gammarus*, distilled water and a solution of sugar is osmotic with sea water are about equally toxic. In both solutions at the warm temperature the organisms die in half an hour. Hypotonic sugar solutions are not as poisonous as the above. Pure solutions of table-salt that are isosmotic with or less concentrated than sea-water, have the same effect as distilled water. The organisms die sooner in a solution containing all the constituents of sea-water except sodium chloride, than if kept in distilled water. If a solution be used in which NaCl, KCl and $CaCl_2$ are present in the same concentration in which Na, Ca and K are contained in sea-water, *Gammarus* will live for several days. The addition or $MgCl_2$ will prolong the life of the organism, but the addition of the other constituents of the sea-water will have no effect in this respect. From these facts it follows that the sodium chloride contained in sea-water is by itself poisonous and that this toxicity is neutralized by the Ca—and K—salts, and that the K— and Ca—ions contained in sea-water are by themselves more poisonous than the NaCl, but their toxicity is abolished by the presence of the NaCl. The reciprocal neutralization of these toxic actions requires that the concentration of the antagonistically acting salts or their ions should bear a definite relation to one another, corresponding to the normal relationship in sea-water. These facts corroborate the results already obtained by Loeb, in showing that sea-water with respect to its contained organisms (and the serum of an animal with respect to the tissues which it bathes) furnish a solution of salts which is in physiological equilibrium, in which the toxic actions mutually antagonize one another. If the concentration of certain constituents be altered within certain narrow limits, it is possible to impart to the tissues properties which they do not possess normally, as the author has shown in his experiments on artificial parthenogenesis, the rhythmical contractions of muscle and the increase in the excitability of muscle and nerve. The author is convinced that this theme is pregnant with suggestions for the science of pathology in general, and for that of nervous diseases in particular. The researches furthermore strengthen the hypothesis that the toxicity of distilled water and other substances depends upon the fact that electrolytes leave the organism. It is probable that antagonistic salts or ions do not leave with equal rapidity or in the same relationship. Such a disturbance of the relation of the concentrations of antagonistic salts or ions in the tissues, would hasten the onset of death.

Resuscitation of the Heart.—A number of interesting experiments of A. Velich (Münch. med. Woch., Aug. 18, 1903) prove that the heart can be made to contract many hours after the death of the animal, provided an artificial circulation of some nutritive solution be kept up in the cardiac muscle itself. Thus, a young dog was killed, the heart removed immediately, placed in physiological salt solution, and exposed to a low degree of temperature. Twenty-four hours later, a fluid containing sodium, calcium and potassium chloride, bicarbonate of soda and 0.1 per cent. glucose, was allowed to circulate in the coronary vessels. After several minutes, both auricles began to pulsate distinctly and soon the ventricles also showed feeble contractions. In another experiment a dog was killed by means of nicotine. Ten minutes after the heart had stopped beating, 200 c.cm. of the above-mentioned fluid were injected into the heart in a centripetal direction. A closure of the aortic semilunar valves was affected and the fluid was forced into the coronary arteries and left the heart muscle again by way of the coronary veins. Contractions soon appeared and in a few minutes the entire circulation was restored and the animal revived. The writer believes that this method can be applied with success in medicine, in cases of sudden cardiac collapse.

Action of Bile on the Heart.—The clinical observation has been made that during the course of an acute icterus, the heart action shows marked disturbances, among which the slowing of the pulse is the most noteworthy. In order to explain this phenomenon K. Brandenburg (Berl. klin. Woch., 1903, No. 38) has lately made some animal experiments which go to show that if bile is introduced in small quantities into the circulation, reflex excitation of the vagus is produced by the irritation of the sensory nerves of the heart. This leads to a transitory weakening of the auricular contractions and a slowing of the heart beats. It is only after the introduction of larger quantities of bile that the heart muscle itself is damaged. The long continued action of blood containing bile affects the muscle cells very slowly and first involves those which lie near the openings of the large veins of the heart. The action of the bile on the heart depends on the presence of biliary acid salts, but as these are sparingly produced in chronic icterus, the absence of a slower pulse rate may be thus explained in the latter class of cases. The slowing of the pulse rate in many acute cases of icterus is therefore to be considered a very complex phenomenon, brought about by the combined action of the biliary salts producing in the first place a reflex stimulation of the vagus and in the second a destructive change in the heart muscle cells near the openings of the large cardiac veins.

The Alexins in Recurrent Fever.—It is only recently that the part played by alexins in convalescence

from infectious disease became well understood, and the estimation of the amount of this so-called protective proteid in the various conditions where it is encountered has been engaging the attention of several investigators of late. A. A. MELKICH and J V. KALYAPIN (Roussky Vrach, No. 35, 1903), present a résumé of conclusions touching this subject, as drawn by Housseff, at the bacteriological institute at the Kasan University, according to which the quantity of alexins in the serum of healthy individuals is more or less constant, while their variation in diseased states depends entirely on the pathogenic principle of the given disease. At the height of infection that terminates favorably the amount of alexins is above normal, while this amount falls considerably at the moment of intense struggle between the force of the organism and the infectious principle; there seems to be no relation between the amount of alexins and that of the white blood corpuscles, or their several varieties. The authors base their results on investigations of 14 cases of recurrent fever, in whom there were made daily examinations of the amount of alexins, and the hemolytic power of the serum. They find that the alexin indicator is very high (5.62; 4.82; 5.83;) during the first attack, and diminishes gradually up to the last day (2.84), while during apyrexia the fall comes down to 0.27, but rises rapidly again in two or three days; a considerable fall is also observed on the eve of the crisis. Then the indicator rises at the period of convalescence to 5.06 and keeps at that height up to the time the patient is discharged. As regards the natural hemolysis it seems in a general way to run parallel to the alexin curve, with slight deviation at times. The variations in the alexin curves show decidedly a rise during the beginning of the attacks and a fall at the time of the crisis. During the first apyrexia the curve rises again up to the normal or even above it, and this rise continues for several days. Just before the second attack the curve again approaches the normal, falls after the second crisis, rises rapidly at the period of convalescence and stays so until complete recovery. These results, based as mentioned above on the investigations of recurrent fever, coincide completely with the investigations made by the former investigator on malaria and catarrhal pneumonia. It is unfortunate that the complexity of the investigations, as well as of the calculations, prevented the authors from establishing the number of white corpuscles and similar bodies in the blood, as this would greatly assist us in solving the problem of the origin of the alexins; it would, however, interfere with the investigations concerning the hemolytic and bactericidal properties of serum. Dr. Melkich has, however, in one of his former works, elaborated some conclusions on this subject, and he finds (1) that during the attack the number of white blood corpuscles increases quite rapidly, and this increase reaches its highest a day before the crisis; (2) this increase may last for one or two days, then it gives way to a rapid diminution in the general number of the white blood corpuscles, and every following crisis is accompanied by a more pronounced and rapid hypoleucocytosis. The lymph corpuscles participate but very little in the general increase of the white blood corpuscles, and their curve does not correspond to the curve of the multinuclear cells, nor is it in any way related to the variations in leucocytosis.

Increased Heat Production as a Cause of Fever.—In cases of cerebral hemorrhage in the neighborhood of the corpus striatum there is frequently a rise of temperature and if the temperature of both axillæ is measured a higher record is often obtained on the paralyzed side. In two cases of ordinary hemiplegia, W. HALE WHITE (Zeitsch. f. klin. Med., Vol 50, Nos. 3 and 4) also found the temperature higher in the axilla of the diseased side. In one, the surface temperature was alike on both sides, but the perspiration secreted on the paralyzed side was much higher, so that heat dissipation must have been much more rapid here. Since, however, the internal temperature was increased, it follows that more heat was actually liberated. In typhoid and suppuration the fever is chiefly due to a diminished dissipation of heat, in pneumonia and erysipelas more to an increased production like in hemiplegia.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Bilharzia Disease.—Tropical medicine has come to be of ultra importance to us in the last few years because of territorial expansion. S. R. DOUGLAS and F. W. HARDY (Lancet, Oct. 10, 1903) reached the following conclusions from a study of 50 cases of this disease: The histological characters of the blood exhibit the following changes: (*a*) The percentage of the coarse-grained eosinophile leucocytes is, with very few exceptions, much above the average found in normal blood. This increase is proportionate in the diminution of the polymorphonuclear leucocytes. (*b*) Less frequent is an increase of the large mononuclear leucocytes, and where this is present, it is associated with a diminution of the lymphocytes. The histological characters of the leucocytes in the urinary sediment are as follows: They are almost exclusively coarse-grained eosinophiles, the large mononuclear form being very uncommon. The ova in the urine vary in number from day to day. Large quantities of blood and other cells are often present when but few ova can be found.

Healing Tendency in Nephritis.—After examining the kidneys of rabbits a varying length of time after they had received sufficient bichromate of potassium, to set up an acute nephritis, Ch. THOREL (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 1 to 6) concludes that a healing tendency manifesting itself in cell-division and regeneration of lost epithelial cells shows itself very early at a time when parenchymatous degeneration is still progressive. The kidney possesses the property to replace lost tissue with functionating glandular structures, to a very high degree and the frequency with which acute and subacute nephritis is cured, must be ascribed to this. Where, however, the intoxication continues, all regeneration will be useless since the newformed cells will rapidly undergo necrosis.

A New Culture Medium for Tubercle Bacilli.—W. HESSE (Deutsch. Arch. f. klin. Med., Vol. 77, Nos. 5 and 6) prepares a nutrient agar by boiling 10 gms. of agar, 20 to 25 c.c. of glycerin and 1,000 c.c. of distilled water for one-half to one hour and then filtering. 25 c.c. are then filled into each test-tube and sterilized one hour in live steam on three succeeding days. For each sputum to be examined, six tubes are used and these are rendered alkaline with 0 0, 2 0, 5 1, 2 and 5 c.c. of decinormal potash solution respectively before being poured into Petri dishes. The object of this is to obtain a medium of the same alkalinity as the sputum to be examined. The patient is directed to remove all saliva from the mouth and then to cough the sputum from the deeper parts into a sterile dish. Several small particles are deposited upon the inverted surface of an agar plate and carefully distributed. The sputum is thus isolated into a number of small flakes and a sterile cover-slip is loosely placed over one of these. The dish is then encircled by means of a rubber band and placed in the incubator. The material necessary for the growth of the bacilli is contained both in the sputum and in the culture medium. After 1 to 3 days the germs will have multiplied upon that medium whose alkalescence

corresponds with that of the sputum, and it is only necessary to remove the cover-slip and stain with carbol-fuchsine. After one to two weeks the colonies will be visible with low magnification. Hesse believes that the alkalinity of the mucus in the bronchi plays an important part in infection. If a catarrhal condition of the air-passages exists and tubercle bacilli are inhaled a general infection is less liable to occur, if the reaction of the mucus differs materially from that of the former culture medium of the germs, since their propagation will here be slow and the organism will have time to protect itself against their invasion. Where, however, the reaction is the same, a generalization of the infection is more apt to occur. Bovine mucus is much more alkaline than human, hence the bacilli from cattle can only cause local lesions in man and conversely.

Differential Leucocyte Count in Early Days of Typhoid.—The value of a differential count of the leucocytes during the first week of the disease has generally been thought to be of doubtful importance for the relative changes peculiar to typhoid were believed to begin during the second week and gradually progress during the third and fourth. H. A. Higley (Med. Rec., Sept. 19, 1903) has carefully counted the leucocytes in a number of cases within the first week of what was subsequently proven by various clinical and bacteriological tests to be typhoid fever. In order to determine the day of the disease, considerable reliance was placed upon the time of the appearance of the eruption, which was frequently and faithfully examined for. The time when it first appears is given differently by various authorities, but it is pretty generally agreed that it should appear from the seventh to the tenth day of the disease. In each of his cases the leucocyte count was taken at least three days before the appearance of this rash and, therefore, the case could safely be said to be within the first week. The average percentages for the various leucocytes were: small mononuclears, 17.8 per cent.; large mononuclears, 21.1 per cent.; polymorphonuclear neutrophiles, 59.4 per cent.; eosinophiles, 1.7 per cent. Such an increase of large mononuclears in the early stages of the disease would naturally be of considerable assistance in making a differential diagnosis. There is, however, always an important personal element in distinguishing the small from the large mononuclears, and it should be said that in these results reported above all those mononuclear non-granular leucocytes which were larger than a red blood cell (Jenner stain) were counted as large mononuclears.

Behavior of Typhoid Bacilli in Milk.—From the results of a large number of practical experiments and culture tests, R. Bassenge (Deut. med. Woch., Sept. 24, 1903) finds that heating milk to 60° C. for five minutes is sufficient to destroy whatever typhoid bacilli may be present. For this purpose earthenware vessels are preferable to those made of iron or enamel ware. The destruction of bacilli in raw milk is favored by the formation of acids, such as lactic, butyric, etc., when the acidity becomes greater than 0.3 to 0.4 per cent. and has been present for over twenty-four hours. In buttermilk, whey and butter, the bacilli perish under the same conditions. During the process of centrifuging milk for making butter, the bacilli largely find their way into the cream and may remain there in an active state until the condition of acidity already mentioned arises. This corresponds, however, to the period when the taste of the butter becomes affected, and before this time, that is, when the butter is more apt to be eaten, the bacilli are still present in their original virulence.

Morphological Biology of the Tubercle Bacillus in Unfavorable Media.—The changes which the bacillus tuberculosis undergoes in media unfavorable to its development have been carefully studied by G. Guyot (Gazz. Osped., Sept. 20, 1903). Naturally, the greatest interest centers in the variations seen in the organism under the influence of antituberculous serum. These the author describes as follows: The bacillus first swells, stains feebly, and as it increases in length and breadth the coloration becomes paler and irregular. Then follows fragmentation of the body, so that it seems to be divided into two or three parts of normal color united by almost colorless segments. From the junction of two or three of such bacilli a chain is formed which is not unlike the streptococcic chain in appearance. Ultimately the fragments of the bacilli become isolated and assume a great variety of shapes. In addition to the chain-like formation of the bacilli, agglutinated amorphous masses of the organism are seen. The author calls especial attention to the small round or oval bodies seen by him when the bacilli were in advanced stages of degeneration. These are generally seen at the extremity of a bacillus; but one being associated with a single organism, as a rule. They stain very intensely and are most abundant in specimens subjected to the influence of antituberculous serum for two weeks or more. The writer thinks it not improbable that these bodies may be spores.

Diminishing the Virulency of Tubercle Bacilli.—The results of extensive experiments by H. Herzog (Centralbl. f. Bakt., Oct. 9, 1903) demonstrate without a doubt that tubercle bacilli, inoculated into cold-blooded animals, will remain virulent for over 190 days. If, however, the germs are again used for inoculating guinea-pigs these animals will remain alive a much longer time, which is not due to a diminution of the number of germs in the cold-blooded organism, since they readily multiply here, but to a direct reduction of virulency. By inoculating a second and a third series of frogs with germs which had already passed through a frog, an increased susceptibility of these animals is noted, showing a marked power of adaptability on part of the bacillus. Morphologically it will more closely resemble the germ of fish tuberculosis and guinea-pigs do not so readily succumb to inoculation. The maximum temperature of growth is also considerably lower. The same observations were observed when the germ of bovine tuberculosis was substituted for that of human tuberculosis in all the experiments, which seems to show that they are at least closely allied.

Behavior of Blood at Different Ages.—Certain animal poisons, as spider toxin, behave differently with the blood of different species: with some animals hemolysis is rapid and complete while with others, no effect is produced, since a sufficiently large number of receptors are circulating in the blood. That these receptors may only be lost, as the animal gets older, is shown by H. Sachs (Centralbl. f. Bakt., Oct. 9, 1903). Newly born chicks possess a complete immunity toward spider-toxin, while in the full-developed animal the poison rapidly proves fatal. An increased resistance in general is not, however, present, for other poisons, such as staphylolysin is more toxic for young animals than for old. Fetal bovine blood is very susceptible toward cobra-poison, but becomes more resistant as the animal grows and the phenomenon here stands in close relation to the degree with which the lecithin is combined with the red cells.

Agglutination of Streptococci.—Streptococci obtained from the blood of scarlet-fever patients and grown for some time upon artificial culture media are specifically agglutinated in the great majority of cases by an immune serum obtained from these streptococci, according to P. Moser and C. P. v. Pirquet (Centralbl.

f. Bakt., Oct. 9, 1903). The phenomenon is typical both microscopically and macroscopically. Attempts at serodiagnosis, similar to the Widal reaction, were then made, with partial success. Distinct agglutination was obtained in scarlet fever in 54 per cent.; in other affections in only 11 per cent. The more severe cases of scarlet fever give agglutination more readily. Distinct clumping was also obtained in meningitis, perityphlitis and with placental serum, but never in the dilution of one to eight.

Anatomical Lesions after Ingestion of Organic Extracts.—There are very many articles in literature upon the physiological action of the various organic extracts but hardly any upon the lesions they produce when injected. In a preliminary report, G. GHEDINI (Centralbl. f. Bakt., Oct. 9, 1903) records some results he obtained with pancreas, thyroid, thymus, brain, testicle, ovary and suprarenal gland. The axillary and inguinal lymph-nodes were found much swollen, liver, kidneys and spleen were in an inflamed condition with infiltration, degeneration and vessel changes and the thyroid was hyperfunctionating. Other organs, even if they corresponded to the organ injected, showed no change. Probably the lesions are a result of the liberated nucleoproteids which act as non-specific toxins. This would explain why organs which normally free the body from poisons are most particularly altered.

Meningococcus in the Nose.—It is well known that pneumococci are frequently found both in nose and mouth of individuals not suffering from pneumonia, and the article of F. T. LORD (Centralbl. f. Bakt., Oct. 9, 1903) proves that the meningococcus may occur in the same secretions without meningitis. Organisms present in the nose and resembling this diplococcus in morphology and staining reaction cannot be accepted as meningococci unless the diagnosis is confirmed by cultures, in view of the close resemblance which exists between the meningococcus, gonococcus, pneumococcus and *Micrococcus catharrhalis*. In Lord's patient the process began as an ordinary coryza with lacrimation, headache and prostration. The nasal secretion, at first watery, became purulent in a few days With more abundant discharge, the general symptoms did not abate and it took over three weeks before the patient was again able to work.

Cause of Ekiri.—In the dejections of patients suffering from ekiri, a peculiar form of dysentery of Japan, S. ITO (Centralbl. f. Bakt., Oct. 9, 1903) discovered a pathogenic bacillus which morphologically resembled the colon bacillus. It was decolorized by Gram, possessed more active motility than the colon bacillus, did not fluidify gelatin, generated gas in the presence of glucose, did not coagulate milk and was further marked by a much delayed indol reaction. This germ was never found in the feces of healthy individuals. By adding blood-serum of patients who had recovered, a distinct agglutination took place but the serum of healthy individuals or of those who had suffered from dysentery, acute enterocolitis with fever and allied diseases had no effect. The blood-serum of recovered patients did not cause clumping of the dysentery, typhoid or colon germs. The absolutely specific character of the bacillus could also be demonstrated by inoculating animals.

Studies upon Smallpox. In the blood removed aseptically from the heart of patients who had died of smallpox H. DE WAELE and E. SUGG (Arch. Internat. de Pharmacodyn. et de Therap., Vol. 12, fasc. III and IV) discovered the streptococcus in pure culture. Their number varied with the stage of the disease and was greatest with the papular and papulovesicular stage. During life they could also be found in the blood withdrawn as well as in the vesicular eruptions. This streptococcus was agglutinated by the blood of all patients suffering from variola, and conversely the serum agglutinated any of the streptococci isolated from other cases of smallpox, but not other streptococci except such which were specific for diseases which the patient had passed through. The serum of every vaccinated individual also agglutinated this streptococcus but less so than after an attack of the disease. The serum of non-vaccinated individuals or of newly born infants possessed no agglutinating power; this developed only and increased during the course of the disease. The various antistreptococcic sera on the market did not agglutinate the variola germ but with the serous exudate of the vesicles, distinct clumping could be obtained. The germs were also abundant in the crusts and in the air of the wards and sick-rooms. It is probable that it gains entrance into the system by the respiratory passages and in two-thirds of the cases the disease begins as an angina with infectious secretion. This angina is simultaneous with the first rise in temperature. The streptococci then pass into the blood and are arrested in the skin (papular stage), where they proliferate (vesicular stage and second rise of temperature). This peripheric infection is followed by an invasion of leucocytes (pustular stage) and as the epidermis separates under the lesion, the pustules dry out and become converted into crusts. One can also find the streptococcus in postvariolous abscesses and a postvariolous septicemia may be due to this germ which, however, undergoes changes which tend to alter its characteristic properties and which can be demonstrated by animal experiments. A streptococcus can be isolated from the various vaccine viruses which present the identical properties. It is not agglutinated except by the serum of vaccinated or variolous subjects. The addition of glycerine to the virus, especially when this is old, makes it difficult to demonstrate the organism by simple culture. The plurality of streptococci is rendered certain by the discovery of the germ of smallpox and it may soon be possible to separate it into distinct groups. An efficient serum diagnosis and serumtherapy is promised in the near future.

The Influence of Potassium Sodium Tartrate on the Circulation.—A contribution to the knowledge of this subject is made by F. KLEEBERG (Am. Med., Oct. 17, 1903), who employed dogs for his experiments. In each case the animal was given 0.02 gm. (¼ gr.) of morphine sulphate before beginning the administration of ether. The canula was invariably introduced into the carotid artery for determining the blood pressure, and the salt was injected into one of the crural veins. In the author's estimation these experiments prove that potassium sodium tartrate, when injected intravenously in small amounts (up to 30 mg. per kilogram of dog), causes a fall in the blood pressure and an irregularity in the rhythm of the heart's action. This may be accompanied by a primary slowing of the heart's beat, but the dominant action is to cause an increase in the rate of pulsation. The fall in pressure occurs even though the quantity of salt injected contains less than 3 mg. of potassium per kilogram of dog. If the amount introduced is larger and yet insufficient to cause complete paralysis of the heart, the fall of blood pressure is accompanied by a slowing of the heart. If the salt is introduced in comparatively large quantities, the animal quickly expires, owing to paralysis of the heart, respiration continuing for some moments after the heart has been arrested in diastole. It was also found that neutral sodium tartrate, when introduced intravenously in moderate amounts (about 50 mg. per kilogram), stimulates the heart, causing a rise in blood pressure with a slight increase in heart rate. He believes that

the depressing factor is the potassium ion, and that the sodium and tartaric acid ions are without influence in causing the depression.

The Physiology and Pharmacology of Silicic Acid.—It has been generally believed that silicic acid is a comparatively unimportant substance from the standpoint indicated. H. Schulz (Deut. med. Woch., Sept. 17, 1903) has found that the administration of the acid in the human subject was not followed by any effects on the respiratory or vascular systems, but that small amounts caused marked derangement of the nervous system, including headaches, vertigo, somnolence, with an inability to concentrate the attention, nervousness and irritability, uncertainty in gait and tremor of the hands. Cutaneous effects consisted of an eruption of acne pustules or papules, and also hyperidrosis, with an acid perspiration and desquamation. The hair manifested a tendency to drop out and the nails to grow faster. The digestive disturbances consisted of flatulence and colic, alternating constipation and diarrhea. In both man and animals the stools were remarkably yellow. Diuresis was not noted unless the acid had been taken a long time. In some cases polyuria developed with smarting pain on urination, while in others there was retention, the urine being concentrated and of a red color, until diuresis had become established. The patients complained of a feeling of weight in the legs and were easily fatigued. Pains in the tibiæ were also noted and the joints were stiff and ached, suggesting the symptoms of lead poisoning.

Hernia Inherited from Mother's Side and Polydactylism from Father's.—An interesting report is presented by B. K. Bauer (Prak. Vrach, Sept. 20, 1903) touching upon a male child, one year old, in whom the author discovered a right inguinal hernia the size of a goose egg, which the mother observed when the infant was four weeks old. The small fingers of the child's hand show traces of supernumerary members which had been severed soon after birth. The middle and ring fingers are grown together by the aid of an intervening membrane, while the large toes are so wide as to give the impression that they were made up of two, and the appearance of the double nail lends the more credit to this belief; the middle and second toes are grown together up to the phalangeal joint; but the toes in general are quite movable. The boy's brother, a child of two, has a left inguinal hernia, which also appeared for the first time when he was but one month old. A membrane unites the middle and ring fingers of both hands, but the fingers are fully developed. The toes are just as large and wide as those of the other child. The last toes of either foot have marked supernumerary members. According to the mother's statement neither she nor her husband ever had hernia, while her father is at present suffering from hernia, which made its first appearance during the first month of his life, two of her uncles also have hernia, which were noticed at the same age as in her grandfather; a similar state of affairs is seen in four of her cousins, so that in general it may be said that the family on the mother's side shows a predisposition toward inherited hernia. A similar predisposition as regards polydactylism is noticed in the family on the father's side, thus: The father himself has six fingers on either hand; the middle and ring fingers of the left hand are grown together, the toes are large and wide; the same abnormalities are seen in his father—that is, the children's grandfather, whose father in his turn presented a similar appearance. It was impossible to elicit any more positive history as to similar abnormalities in other branches of the families. Both children were operated on for hernia and syndactilia successfully.

NEUROLOGY AND PSYCHIATRY.

The Nature of Inhibitory Processes within the Nervous System.—A review of the current theories on inhibition, a new hypothesis as to the nature of this phenomenon in the nervous system and an experimental support for the same, are discussed by W. McDougall (Brain, Summer, 1903). The first theory as to the significance of inhibition was put forth by Hering, who in holding that protoplasm is the seat of two simultaneous antagonistic processes, namely, anabolism and catabolism or assimilation and dissimilation, suggested that inhibition would correspond to the latter. According to Gaskell, who worked out independently a similar theory, increased anabolism tends to inhibit the vital manifestations, the effects of catabolism, only by checking the rate of catabolism. The view taken by Mercier, in his paper on "Inhibition," is that this phenomenon consists in the blocking of the paths of discharge of "nerve centers," the resistance of such paths being raised above the normal in some way. A view long ago proposed by Wolkmann was that inhibition is a process of interference of waves of nervous action in a manner analogous to the interference of sound and light waves. According to the author, inhibition in the greater part of the nervous system, all the part concerned in the control of the skeletal musculature, consists simply in the cutting off from the tract inhibited of the excitatory impulses by which alone its activity can be maintained. The principle of psychology, that the mind can attend to only one object at one moment of time, lends support to the view that the inhibition of a mental process is always the result of the setting in of some other mental process, or, in other words, that inhibition appears always as the negative or complementary result of a process of increased excitation in some other part. Inhibition may, therefore, be regarded as essentially the result of a process of competition. The phenomena of inhibition in the spinal cord and the facts of "reciprocal innervation," as established by Sherrington—namely, that when an excitatory impulse is sent along a motor nerve, an inhibitory impulse is transmitted to the spinal centers of the antagonists of the contracting muscles—all tend to support this so-called "drainage" theory of inhibition, whose significance would appear to depend upon the fact that a limited amount of vital energy is at the disposal of the nervous system, so that when this energy is sent along certain channels, it must necessarily be withdrawn from other quarters, which withdrawal would constitute the phenomenon of inhibition.

PEDIATRICS.

The Glycogenetic Function of the Child's Liver in Pertussis.—The work of Crisafi having suggested that a reflex stimulus might be sent from the central nervous system to the liver by reason of the irritation of the laryngeal end filaments of the vagus in pertussis, and produce much the same effect upon the glycogenetic function of that organ as do puncture of the fourth ventricle, lesions of the vagus, pons, etc., D. Benedetti (Riv. di Clin. Ped., September, 1903) has sought to solve the question of insufficiency of the liver's glycogenetic function in pertussis by administering to 13 children affected with that disease from 1 to 1½ ounces of levulose and testing the urine passed four hours after its ingestion. A positive reaction to phenylhydrazin showed the presence of levulosurea in 12 of the patients; and the author accounts for the negative result in the thirteenth upon the ground of a more active combustion going on in the organism in this case owing to the high temperature (103° F.). Some enlargement of the liver was apparent in all the patients. The results

of this investigation, in the author's opinion, justifies the belief that the glycogenetic function is insufficient in children suffering with pertussis.

Leucocytes in Summer Diarrhea.—The healthy infant has about 13,000 leucocytes in the cubic millimeter and the differential count shows that about 40 per cent. are polynuclears, 55 per cent. are lymphocytes and about 5 per cent. are mononuclears. J. Zahorsky (N. Y. Med. Jour., Sept. 12, 1903) has investigated the leucocytes in a large number of cases of infant diarrhea and has found that there is an increase in the number of leucocytes in nearly every case, but the increase is too variable to be of any diagnostic importance. There is, however, one change which stands out prominently, and that is the relative increase in the polymorphonuclears and the decrease in the lymphocytes. This is of importance, because it is found to be of value in prognosticating the severity of the attack. A marked increase in the number of polynuclear leucocytes means that the child is badly poisoned, whatever the other signs may indicate.

GENITO-URINARY AND SKIN DISEASES.

Acne Rosacea.—The commencing erythema of acne rosacea is a very troublesome and disfiguring complaint, especially to ladies. The local treatment is most important. H. S. Purdon (Dublin Jour. of the Med. Sciences, Sept. 1, 1903) uses an ointment containing 10 grains of the iodide of cadmium in one ounce of vaseline rubbed well into cheeks and nose at night, and washed off next morning with hot water and an overfatted soap, accompanied by massage of all the affected skin. The iodide of cadmium does not stain the skin and is an excellent local stimulant. If too strong it will irritate.

Effect of Light and Heat Rays on the Temperature of the Skin.—An interesting series of observations have been made in a series of about one thousand cases with the aid of Herz's apparatus, by E. Sommer (Berl. klin. Woch., Oct. 5, 1903). This apparatus is essentially a differential air thermometer, furnished with an alcohol manometer. Incandescent electric lights in blue, red, yellow and green globes were employed, the lamp being held about 10 cm. from the skin for a period of ten minutes. It was found that the skin over chronically inflamed joints was lower than on the healthy side, unless an acute exacerbation of the process was present, in which case the relations were reversed. Under the influence of warmth and light radiation the temperature of the side treated always rose above that of the other side; but there were certain cases noted in which the temperature after exposure to the rays was less on both sides than before. Radiation of this type does not produce a reaction in the sense of a cooling, with the same regularity as results from the application of heat and cold by other methods. The effects of the rays with a short wave length, are of longer duration than those with long wave lengths. After two or three hours the relations change, the side exposed seems colder than the other, a condition which is apparently due to the reactionary rise on the side which was not exposed

Abnormal Frequency of Urination Treated with Epidural Injections.—Where abnormally frequent urinations are due to disturbances in the bladder innervation, Fernand Cathelin, of Paris, devised the operation of epidural injections and obtained such good results that considerable work has been done recently along similar lines by F. C. Valentine and T. M. Townsend (Med. Rec., Sept. 26, 1903). The eight cases reported were all patients at the Manhattan Hospital West for the insane. They were all adult women and had histories of wetting the bed and clothing frequently for some time previously. The injections are made into the sacral canal between the periosteum of the vertebræ and the dura mater. The canal is reached through its opening in the sacrum. The patient is placed in the Sims position, the area sterilized and the small osseous tubercles just below and to either side of the last palpable sacral spinous process are made out. The needle of an aspirating syringe is then thrust through the skin drawn tightly between these two tubercles, the needle being held at an angle of 40° to the sacral curve until it passes through the membrane covering the opening of the canal when it is lowered to 20° and pushed on into the canal. Five centimeters of sterile salt solution were usually injected at first and later ten or even fifteen. These injections were made at intervals of about one week and favorable results followed immediately in all eight cases upon whom the injections were made. These cases have not been followed very long, but most promising results have thus far been obtained. The injections seem to be in nowise dangerous to the patient, and are no more painful than any hypodermic injection. The immediate effects are rarely even disagreeable. The rationale of the treatment is not fully explained and is probably not wholly understood.

OBSTETRICS AND GYNECOLOGY.

Ovariotomy During Pregnancy.—The patient entered the hospital because of a large tumor in the abdomen. On examination Baikoff (Prak. Vratch, Aug. 30, 1903) found the patient, a peasant woman, thirty years old, to be of good appearance and nutrition, but with an abdomen of such dimensions as to make any thorough examination of it almost impossible. It presented the appearance of pregnancy, palpation elicited an elastic, fluctuating tumor, its upper end toward the gastric region, the lower reaching down into the pelvis. With the patient on her back there was no diminution in the size of the tumor; percussion brought out dulness. In the lower portion of the abdomen another swelling was palpated emerging from the pelvis and rising to almost the middle between the umbilicus and the pubis; this feels like the uterus. Combined examination corroborate the above, and with the linea alba, pigmented areolæ and the condition of the vaginal walls a diagnosis of pregnancy of four months was made in addition to cystoma of the left ovary. In view of the rapid growth of the swelling, as well as of the gravid uterus, immediate operation was advised and performed. Incision was made in the median line beginning with a point two fingers above the umbilicus down to the same distance from the pubis. On opening the abdominal cavity the pregnant uterus was seen in the lower portion of the wound, while the upper was occupied by a part of the tumor beyond it. The size of the swelling necessitated puncture by a Spencer Wells trocar and the contents, a thick, gluey fluid of a dark color mixed with pus, evacuated. The emptied cyst was then brought outside and separated by cutting through its pedicle. The abdomen was then closed and aseptically bandaged. The course postoperatively was uneventful. On the fifteenth day patient began to suffer from strong uterine contractions and hemorrhage. In anticipation of an impending abortion extr. viburnum prunifol. fl. was administered, twenty drops four times a day, and in five days patient left hospital entirely recovered (no abortion having taken place). Author saw patient again in two months, when the pregnancy was continuing normally, but does not state as to the termination of same.

Gonorrhea in the Female.—A series of questions concerning some of the more interesting points relative

to gonorrheal infection in women was submitted to several distinguished gynecologists, and the answers embodied in an article in the Internat. Med. Jour. for Oct., 1903. The proportion of pus tubes secondary to gonorrhea encountered in the various practices varied from 12 to 85 per cent. Radical surgical treatment alone gives hope for cure unless the infection is limited to the urethra and Bartholinian glands, but even with extensive operation the gonococcus may remain hidden in the deeper layers of the vagina, urethra or glands. The fact that pregnancy may follow is no proof of a radical cure. Vaginitis is rarely of gonorrheal origin, except in children; in adults it only constitutes about 10 per cent. Endocervicitis is best treated by the application of tincture of iodine, argyrol 30 per cent., negative galvanism, or carbolic acid. Repeated applications can thus prevent extension in recent cases. For corporeal endometritis, topical applications are generally not admissible, unless the os is wide and drainage perfect; it is generally better to use a double-current catheter with boric acid solution or weak iodine. The opinions were divided concerning hysterectomy for pus tubes, the majority do not practice removal of the uterus and are even in favor of conservative treatment for tubes and ovaries. Microscopical examination is often the only safe way of diagnosing urethral gonorrhea. Wherever the discharge is taken from, pressure should always be made upon the parts so as to compel the compound racemose glands to discharge their deeper contents. Gonorrhea extends to the endometrium, tubes and peritoneum in about 5 per cent. of those infected, but deaths are very rare.

EYE, EAR, NOSE AND THROAT.

An Operation for the Removal of Tonsils.—When the hypertrophied tonsils are not attached to the pillars, no difficulty will be experienced usually in removing the offending organs by means of the various tonsillotomes. W. H. Steers (Med. Rec., Oct. 3, 1903) believes that in those cases where there are a number of adhesions to the pillars these instruments are unsatisfactory, as they leave a large part of the tonsil behind. In these cases he recommends the use of a knife and forceps to assist in dissecting out the tonsil. He employs a hook-like knife modeled from the lines of a strabismus hook, making the handle longer and stouter and giving a knife edge to the concavity and end of the hook. The tonsil being well exposed by mouth gag and tongue depressor, the tonsil is seized by a Kelly volsellum and drawn toward the opposite side. The hook-knife is then passed between the tonsil and the anterior pillar, taking care to cut outside the tonsil and not through it. The finger is then introduced into the wound and using it as a blunt dissector the tonsillar mass is turned out, leaving it attached to the posterior pillar and by mucous membrane only, which is divided by the ordinary blunt pointed tonsil bistoury. All the tonsillar tissue may thus be removed and there need be no fear of a recurrence of the trouble.

Rational Treatment of Corneal Ulcers.—In all cases of corneal ulceration there is an infiltration of a circumscribed area and more or less suppuration with a consequent loss of tissue. This process irritates the nerve filaments in the cornea and causes the blood vessels to dilate, which brings more blood to the iris and conjunctiva. This causes the escape of albumin into the anterior chamber, makes the excretion of aqueous more difficult, and raises tension. W. L. Phillips (N. Y. Med. Jour., Oct. 3, 1903) has obtained the best results in the treatment of these conditions by using means to contract the arteries and thus diminish the vascularity of the parts. First, he uses suprarenal extract dropped into the eye at least three times a day and as the disease increases, the lung must be instilled more frequently up to ten times daily, depending upon the absorption of the remedy and its action upon the heart. Secondly, because there is almost always a germ present a mild and soothing antiseptic such as boric acid should be frequently employed during the day. To assist in building up the lymph corpuscles and bringing about resolution, he has found that a 5-per-cent. solution of nuclein gives great assistance, and it should be combined with and used in the same way as the suprarenal solution. Furthermore, the conditions which have a bearing upon the local disease must be looked for and treated, for frequently it is found that there is an important predisposing cause in the form of caries, adenoids, hypertrophied tonsils, turbinates, etc. The above method seems to give much better results than has previously been obtained by the use of atropine, cocaine, hot fermentations, yellow oxide ointment, etc., which either tend to increase the vascularity, increase tension or prove too irritating to the conjunctiva.

Treatment of Ozena.—That the *Bacillus mucosus* is the cause of ozena is the belief of A. Casassa (Rev. internat. de Therap. Phys., Oct. 1, 1903), who has studied the effect of a number of bactericidal agents upon this germ in the hopes of discovering a cure. White or colored sunlight or light from artificial sources had very little effect upon the growth of the germ, but radiotherapy proved singularly effective. The virulence of the exposed cultures was very much diminished and white muci survived otherwise fatal injections a much longer time. Clinically, the germs are killed upon the nasal mucosa, glandular activity is stimulated and a permanent cure is established.

MEDICINE.

Localization of Pneumococci.—Bacteriological examination proves that the pneumococci are normally present on many mucous membranes and may give rise to disease in almost every organ of the body. They abound in the mouth, since the alkaline secretion here offers especially favorable conditions for growth. Normally, the epithelial cells offer sufficient protection, so that they must be regarded as harmless. It is surprising that so few cases of tonsillitis depend upon a pneumococcus infection. I. O. Wandel (Deutsch. Arch. f. klin. Med., Vol. 78, Nos. 1 and 2) could only find one or two instances among several hundred. The course of the angina is characteristic in that onset and defervescence are sudden and nephritis and joint affections frequently follow. Locally an acute catarrhal, erythematous or pseudomembranous inflammation exists or the tonsil may suppurate. From the mouth the germs may invade the salivary glands, so that a parotitis complicating pneumonia need not necessarily be metastatic. In the nose and nasopharynx the germ is usually as abundant and harmless as in the mouth, but an acute catarrhal rhinitis with slight fever and of short duration may be set up. That general sepsis may, however, follow is evident from a quoted case: A patient died in acute collapse two days after a hemorrhage from a septal perforation was checked, and at autopsy virulent pneumococci abounded in the spleen. The accessory sinuses and meninges may also be invaded, particularly if congenital or traumatic defects exist in the roof of the nose, though the natural channels may also serve as passage-way. The pneumococcus also plays an important rôle in the etiology of otitis media; thus the author found it in 14 out of 15 cases, and frequently in the pus of mastoiditis, periphlebitis, and otitic brain-abscess. In the otitis of measles,

diphtheria and scarlet fever the pneumococcus is usually accompanied by streptococci. The site of preference is pulmonary tissue, but increased virulence is not sufficient here to set up an inflammation; there must also be a diminution of resistance, such as induced by trauma or cold. It is less commonly known that catarrhal pneumonia, peribronchitis and even catarrhal bronchitis are usually caused by the pneumococcus. From the lungs the infection may travel toward the pleura or downward into the peritoneum. Migration through the diaphragm is possible only with diseased pleural endothelia. General peritonitis is rare, for the peritoneum will often show no change or else there is a marked tendency toward encapsulation, and it is probable that many obscure cases of perihepatitis and perisplenitis were originally secondary to a pneumonia. Pneumococci are frequently found in the blood in uncomplicated cases, but an inundation occurs only rarely, and such patients usually die of their sepsis. The portal of entry is not difficult to find since there is a free communication between the alveoli and the capillary system, especially in the stage of red hepatization. In most fatal cases the cocci may be found in the bone-marrow of the vertebræ. It follows that metastases are usually encountered only in the severe cases. Their usual localizations are the endocardium, meninges and joints, especially the ankle, hip and hand. Since the pneumococcus does not find a favorable medium for development in the blood, it need not surprise that infarcts secondary to endocarditis are frequently non-infectious, except in the lungs, where the tissue is already so damaged that suppuration is common. The endocarditis is often characteristic in that the vegetations are very large and brittle, so that portions are easily broken off by the blood. Protracted cases, lasting four to eight weeks, are more apt to suffer from this complication than the typical ones. It is rare to find germs here in the lungs, since they have all migrated into the bronchial glands from where they reach the blood directly or through the thoracic duct. This will also explain why the right side of the heart is more frequently involved. The natural filtering apparatus of the lung will become insufficient as the cocci proliferate and obstruct the lymph-channels so that resolution is delayed and the pneumonia runs a protracted course. In 50 per cent. of the cases the valves are predisposed to inflammation, in the other half the resistance is probably reduced by the general intoxication or by the trauma, which the valves are subjected to by the forcible impact of the thrombotic masses.

THERAPEUTICS.

The Therapy of Radium.—In concluding his review on the physiological and therapeutic value of radium, N. A. NEVZOROFF (Prakt. Vrach, Sept. 20, 1903) calls especial attention to Dr. S. V. Goldberg's report on the use of this substance in the treatment of rodent ulcer. In one case where the ulcer occupied an area extending from the left wing of the nose up to the inner canthus of the eye, and was still rapidly progressing, there was observed a very marked improvement even as early as the sixth day after the first application of a quantity of 75 mgm. of the substance enclosed in a box and allowed to act during a period of one hour and a half; the granulations at the point of application became thicker and firmer, took on a pale, yellow color, and ceased bleeding. Eight days afterward there appeared a necrotic spot, which, however, healed over in a week. The further sittings were at one week's interval, and of one-half hourly duration. Altogether, the patient was exposed to the radium rays for seven hours during a period of two months and a half. It was shown from observations that the effect of the rays resulted in a sclerotic process of the granulations and rapid epidermization of the cicatrix. Thus the effect obtained leaves therapeutically nothing better to be desired. A similar favorable result was seen in another case of rodent ulcer in a woman forty-eight years old. It is difficult to determine which bundle of rays that make up in their complexity the radium rays is responsible for the therapeutic effect. One thing, however, is certain, and that is, that in radium one has a very efficient therapeutic agency, easily applied and not requiring any complicated or costly appurtenances. Moreover, as contrasted with the X-rays the rays of radium are under the perfect control of the operator, and thus their effect can be gradually increased or diminished, and may be employed at a certain distance.

Therapy of Diabetes Mellitus.—In the treatment of diabetes D. LENNE (Therap. Monatshft., Oct., 1903) believes that it is just as important to restrict the proteids as it is to limit the amount of carbohydrates, even in the mildest forms of the disease. He does not believe that diabetic coma is directly caused by β-oxybutyric acid in the blood for many cases have been treated with alkalies for months without averting the fatal catastrophe. The acidification is merely one of the symptoms of a grave disturbance. The assumption that acetone, etc., result from the splitting up of fat is opposed to the observation that large amounts of fat are well tolerated in the gravest cases. Little good was seen from the more recently recommended drugs, such as yeast and melithan, and the writer still prefers the natural mineral waters. Perhaps a pancreatic extract containing only the substance of the islands of Langerhans will yet prove efficient.

Action of Nauheim Baths.—Bathing in the lukewarm, carbonic acid water of Nauheim has very little effect in raising blood-pressure, according to O. REISSNER and G. GROTE (Münch. med. Woch., Oct. 6, 1903). Likewise respiration is but slightly influenced. The area of cardiac dulness percussed smaller, but by also percussing the lungs it was found that this was really due to a dilatation of the lungs. The vital capacity was determined after every bath, and was found slightly diminished. All these phenomena are not due to the carbonic acid or the salt, but to the temperature (34 to 32° C.) of the bath, and exactly the same results were obtained with plain baths of the same temperature or by the application of an ice bag to the precordium. The advantage of the carbonic acid lies in the dilatation of the cutaneous vessels, which it induces, thereby enabling the reaction which normally occurs after every cool bath, to already take place within the bath. The contraction set up by the temperature will therefore be only transient and the patients will soon experience a feeling of warmth. The work of the heart will also be rendered much easier and it is probable that an actual diminution in size occurs, though this can be ascertained only by the X-rays.

The Treatment of Sydenham's Chorea with Large Doses of Arsenic.—Some years ago the well-known French pediatrist Comby recommended the employment in chorea of such large doses of arsenic that they seemed at first rather to be fraught with danger, but subsequent employment proved them to be of great benefit in these cases. M. O. SHAIKEVITCH (Roussky Vratch, Sept. 30, 1903) has subjected this method of treatment, as modified by Tilatoff, of Moscow, to a thorough test. He reports some six cases of Sydenham's chorea, and is forced to the conclusion that there seems to be no foundation either in theory or in fact for the employment of large doses of arsenic as recommended by Comby and Tilatoff. In fact, there are some authors who report a positively deleterious effect from such an employment of arsenic.

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DANGERS OF THE SINGLE "L" MOTORMAN.

A RECENT fatal accident on one of the important elevated systems of the Greater City of New York calls attention once more to the utter inadvisability of trusting large trainloads of passengers, especially during the excitement of the rush hours of the day, to a lone man at the head of the train, with regard to whom there can be no proper continuous and responsible guarantee as to mental and physical health. The ferry-boats plying the waters near the Greater City have now for a number of years been compelled by law to have two men in the pilot house, and it is eminently advisable that this same regulation should be enforced with regard to elevated trains. Practically all the reasons alleged for the necessity for this on boats hold also for trains.

Many things may happen unexpectedly to a man that will make his position of motorman likely to be a source of danger for those whose lives are dependent in all emergencies on his good mental and physical condition. It must not be forgotten that sudden death in our modern life occurs so frequently as to make the possibility of its happening something always to be counted on when the lives of many hundreds of people are dependent on a single individual and that individual so placed that at any given moment he is not under the surveillance of someone assuming a like responsibility with himself. During the ordinary hours of the day usually, at least one of the other trainmen is in position to note any presages there may be of impending danger. During the rush hours, however, the crowd makes this absolutely impossible, and passengers themselves are too uncomfortable, as a rule, to take any precautions looking to their safety.

It is not an unusual thing to hear of engineers being overcome in the cabs of their engines, and the presence of the fireman proving the only means of averting a disaster. It is not necessary that complete unconsciousness should occur, much less that death should take place for a dangerous state of affairs to develop. A workman suffering from the incipient stage of some severe internal ailment, such as pneumonia, or an acute attack of nephritis, may well overestimate his strength in the desire to make a full day, if possible, or he may think that his giving up is likely to be a source of inconvenience to other workmen. Especially if a trip is once begun the motorman is likely to hang on grimly, at least, until the end of it, in order not to block traffic in any way. Under these circumstances his mind is not likely to be in any condition to grasp unusual situations, or realize what must be done in an emergency.

In the last few years there have been not a few cases reported in which railroad engineers on trunk lines, apparently in good health at the beginning of a day's work, have suddenly become irresponsible during the course of a trip, have run their trains by stations where they were scheduled to stop, and have only been saved from bringing passengers into serious danger, to say nothing of travelers at crossings over which the train was run at high speed, by the immediate action of the fireman in the cab with them. Such sudden insane developments are infrequent, and yet they may happen, and even the most carefully repeated medical examinations of the men's condition would not entirely eliminate this source of danger. In cold weather, particularly, it is not impossible that men may, when not feeling well, take intoxicants to such an extent as to paralyze their power for meeting emergencies. This represents another type of mental derangement that cannot be entirely guarded against by ordinary supervision.

There are, therefore, many reasons why the presence of a single man at the head of a long, heavy train, carrying its hundreds of passengers during the rush hours should not be considered sufficient. The recent accident represents the best

possible commentary on it. The blame is put upon the dead motorman. Just how he should have come to make the mistake he did seems utterly inexplicable. It is possible that he was not alive, or was unconscious, at the moment when the collision came. He seems to have made no effort to escape, notwithstanding his realization, if he were conscious at all, of the awful danger in which he was placed. There has even been a hint that the man had occasionally suffered from attacks more or less epileptic in character in which there had been some diminution of right mental feeling and occasionally even losses of consciousness. Such things will happen and even true epilepsy may develop insidiously late in life. With the risk of immediate discharge before them such sufferers are prone to dissimulate and, without a posing passengers to cling to their occupation posing passengers to, cling to their occupation until some mishap betrays them.

It will be said that automatic brakes are installed to meet such emergencies and that if the motorman should take his hand off the controller the cars stop of themselves. The accidents since the transformation of the power to electricity do not confirm this and it seems doubtful if safety contrivances can be invented that will prove sufficent to avert the manifold possibilities of danger. We are about to have an immense extension of electric traction with the opening of the subway in the next few months. It is important that a proper policy in this matter should be initiated before some awful accident leads to an outburst of popular feeling that will compel this measure of safety. It is unfortunately only after some terrible casualty involving the loss of many lives and an immense amount of human suffering that railroad ameliorations looking to greater safety have come. Let us hope that this will not need to be the case in the present instance. During the hours of heavy traffic, at least, all the responsibility should not rest on a single individual or the company and its patrons will inevitably have cause to regret it.

SURGICAL TREATMENT OF EXOPHTHALMIC GOITER.

Although it is generally held that fully fifty per cent. of patients with Graves' disease recover either spontaneously or under the care of the internist, it is a most distressing fact that the disease in the remaining half persistently refuses to yield to any known medication.

The three cardinal symptoms of the disease, the tachycardia, the exophthalmos and the thyroid tumor may or may not all be present. If, however, any one manifests itself to the degree which is common in the obstinate and aggravated forms, it is in itself sufficient to render the patient's life miserable and utterly to prevent him from earning a living. This is often a very sad element in the disorder, inasmuch as the disease is most frequent among young girls.

There is accordingly every reason why continued effort should be made and all research encouraged in the lines of surgical therapy for these otherwise hopeless cases. The criticism may be made that the mortality is high. This is admittedly true even in the hands of men who are pioneers in this work in America.

It is not long since Kocher reported the relief of 60 per cent. of fifty odd cases which he had operated upon for exophthalmic goiter. In all of these he performed a simple hemisection of the gland and in all but six he removed it under a local anesthetic. He reported four deaths in all, and these occurred in the six cases operated upon under major anesthesia. Seventy-six per cent. were cured, 14 per cent. were improved, 3 3/10 per cent. were slightly improved. He acknowledged no failures.

The reports of what is generally known as the Jonnesco operation of sympathectomy, because, although first suggested by Edwards, it was subsequently popularized by Jaboulay and himself, are so far as they go almost as satisfactory. Jonnesco reports 17 cases, in most of which a bilateral removal of the superior and middle cervical sympathetic ganglia with the nerves was done. Of these cases 13 were operated upon by Jonnesco himself and the remaining 4 by French surgeons. The deaths were due to erysipelas and pulmonary congestion. It is said that 10 were cured, 5 were improved and 2 not improved.

Very recently a third mode of treating this disease has been brought to American notice by Dr. Willy Meyer, who records that Lanz, of Amsterdam, has been feeding his exophthalmic patients on the milk of goats who have had their thyroids removed. These goats became cachectic at once and died in about six weeks. The preparation is now relatively easy of access, because it has become a commercial product. Lanz's reports are said to be accurate. If so, he has made a distinct therapeutic gain.

Dr. B. Farquhar Curtis presented a report on his most recent thyroidectomies and sympathectomies at the recent meeting of the American Sur-

gical Association, and judging from the attitude of the members of this most representative collection of American surgeons, his views on the subject are accepted as a standard of work so far accomplished on this side of the water. He says that in the few months since reading the paper his views have not changed materially, and we may therefore consider quotations from his notes as giving us the most recent surgical data. He says that after performing a number of operations for the relief of exophthalmic goiter by hemisection of the thyroid, he became alarmed at the frequency of acute thyroidism (so-called for want of a better name) and attracted by the immediate good results claimed by Jonnesco and Jaboulay for sympathectomy, he began to do the operation seven years ago and has now performed it in seven cases. Unhappily the results have not in his hands been as good as those he obtained from thyroidectomy, for he has had two deaths from acute thyroidism and one possibly due to anesthesia. All the operations were done under ether. Both sides of the neck were operated on at one time except in one case. Dr. Curtis prefers the anterior incision to the incision posterior to the sternomastoid, because it allows access to the superior ganglia without extending so high, and it gives better cosmetic results. In many cases he resected not alone the first and second, but the third ganglion as well. This, of course, is the most difficult part of the operation, because of the depth of the organ.

As to the possible causes and means of prevention of acute thyroid poisoning following surgical operations upon these cases but little is known. There is usually no indication immediately after operation that this grave sequel is to subvene. The temperature will, however, suddenly rise to 102° F. and will reach 104° F. in twenty-four hours, then continue to 106° or 107° F. With the rising temperature the pulse will rapidly run up to 150 or even 200. "The face will be flushed, the breath hurried and superficial, the patient will be nervous, twitching, tremulous, talking a great deal. Anxiety, however, I have not usually known, the mind remaining clear and calm enough to the end. In some cases coma has been present, but this is unusual. In one case, the patient had apparently been sleeping quietly when he awoke with urgent dyspnea and died in a few minutes of sustained arrest of the heart. Morphine will quiet the restlessness, but we can find no means to quiet the heart. Drugs are useless or even make matters worse. One patient only survived these symptoms a period of forty-eight hours."

As yet no sign has been recognized by which this fatal sequel may be foretold previous to operation. Not alone in the well-known gross clinical symptoms, so generally recognized as belonging to this disease has no difference been noted, but in the more refined symptoms as well; in the tremor of the limbs, the increase of resistance to the passage of electric currents through the skin, and in other minor details. Other symptoms give no information on this important topic. Furthermore, both grossly and minutely there has as yet been presented no characteristic differences in the thyroid of exophthalmic patients which might be used as guides. It is of the very greatest importance that some means should be reached whereby clinicians may more definitely choose cases for operative intervention.

As to the causes of acute thyroid poisoning, Curtis believes that it is in no manner due to the presence of the thyroid secretion in the blood, although it has been claimed that it can be avoided by very gentle handling of the gland at the time of operation. It has been shown that if a case of exophthalmic goiter is subjected to any form of operation, this poisoning is apt to occur. It may be due to some form of shock.

These considerations are chiefly of interest to the operating surgeon. For the general practitioner, it is of importance to note that we are apparently upon the borderland of important surgical developments in the treatment of chosen cases of intractable Graves' disease, and that members of the community who are afflicted with the disorder should under certain circumstances be given the benefit of operative intervention.

THE QUESTION OF MEDICAL CHARITIES.

The problem of dispensary abuses is in truth as old as the proverbial hills, and it is about as near to solution to-day as it was twenty-five years ago. This is the verdict arrived at by a committee of the Philadelphia Hospital Association, appointed for the purpose of looking into the methods and results of dispensary practice in that city. The data are exhaustive and as a basis for the conclusions arrived at are indicative not only of existing conditions in Philadelphia but, we believe, are quite similar to those that may be obtained in any American city approaching it in size.

Letters were sent out to 481 physicians and to 61 dispensaries asking for an opinion on the defi-

nitions and functions of a dispensary, its abuses, and the remedies or ameliorations, if any are possible. Besides these, ten practising physicians of high repute were asked for an open statement of their personal feelings in the matter. Every one was heard from, and nearly every one held a different idea as to the extent of the abuse and its possible remedy.

Defining a dispensary according to its use one may say that it is a place where the sick poor may find free medical and surgical relief, and by the sick poor is meant that class of people who can buy food but who, by frequent physical disability, cannot buy anything else. There are just three classes who abuse this privilege and they are the patients who can and will not pay, the patients who would but cannot pay, and those who have neither the "will" nor the "can," and each of these has its representatives in every dispensary in the world, no matter where situated. The Philadelphia Committee is possessed of the idea that under the present dispensary law New York has solved the problem of office practice without pay, but no less a man than Dr. George F. Shrady has recently said that: "It may be broadly stated as the result of exhaustive statistical study, that fully fifty per cent. of the patients who apply for free medical aid are totally undeserving of such charity." And this is perhaps too low a figure, in spite of the clerk and the registrar and the chief and the card system. There are hundreds of seemingly honest people who think that a doctor is or ought to be a sort of philanthropic puppet from whom it is perfectly right to exact as much as can be gotten. They forget that from birth until his twenty-fifth year the average physician has been a constant expense to himself or to his family and that no return begins to manifest itself, even in a small way, until the second year after graduation. These same honest ones would never think of picking anybody's pocket, yet to steal a ride in a railway train or to work on the doctor's sympathies are to them altogether justifiable and are marks of real cleverness.

The closing words of the Committee's report are worthy of quotation: "Direct compensation for services rendered by the dispensary physician would be a long step in the right direction and pave the way for other necessary reforms. Until the patient can be cured of trying to get something for nothing, and until the layman and the physician can both be brought to view the objects of the dispensary from the standpoint of the public welfare, radical reforms must be difficult of accomplishment. Indeed, the education of the community to a proper realization of the object for which the dispensary was founded, combined with unselfish and intelligent service on the part of those responsible for their conduct and management, would seem to be the only real solution of the question.

"The abuses of the dispensary resolve themselves very largely into the defects of human character, which can be observed not alone in these institutions, but wherever large numbers of people are brought together. Higher ideals on every side seem the necessary first step in eradicating abuses. Legal enactment and proper supervision will help toward their realization."

It was proposed by nine of those who replied to the circular letter to decrease the number of dispensaries and keep open only those in direct connection with medical schools. So many of such institutions by charging a low fee cheapen professional labor and make the patient feel that he is after all paying well for what he gets. To do this might prove to be an unwise plan, but even with all our free clinics there are lots of "pay doctors" who treat patients privately and receive nothing year after year, because they desire to aid such and partly for the experience they get out of it. Many a young physician who cannot work in a dispensary would be glad to treat the deserving poor in their homes if he could be sure after some such investigation as the Charities Aid Society are in the habit of making that they are really deserving and not shamming. The adjustment of such a plan would indeed seem to be the proper function of such a society.

Dr. Matthew Woods has spoken clearly and frankly on the question, though we may not entirely agree with him:

"Dispensaries, except in connection with colleges, are an injustice both to the profession and laity. They are crimes and abuses made respectable by being under the protection of law. To relieve both layman and medical man from their burden, stamp them out, as people have no more right to beg under a roof and from people sometimes poorer than themselves, than they have to beg in the open street. When people in this land, except recent emigrants, are so poor that they cannot pay a moderate fee to some struggling physician, their poverty is a crime, deserving punishment rather than encouragement. It is contrary to the spirit of American citizenship to accept anything without rendering a just return."

To the well-established physician it is not a matter of direct interest whether patients are treated free at the dispensaries or not, but to many who are as yet below the half way round of the ladder the question is one of vital importance. Perhaps the incoming administration is looking for just such a chance to show its ability in dealing with civic problems.

ECHOES AND NEWS.

NEW YORK.

Diphtheria Epidemic Up State.—In the village of Suffern, Rockland County, diphtheria is epidemic. Twenty-one cases have already been reported, and the Board of Education has ordered the schools closed. A prominent teacher is one of the victims of the disease.

Physicians' Fees and Small Debtors.—That small debtors can be forced by law to pay up was discovered yesterday when Comptroller Grout was notified by a Fulton street firm, with a claim of $7 against Policeman Walter S. Chapman, of the Canarsie station, Brooklyn, that it proposed to garnishee his salary until the full amount was paid. It was found that at the last session of the legislature a bill was passed, which obtained the approval of the Governor, providing that in all cases where a man or woman makes a salary of $20 per week or over an employer, on legal action being taken by the creditor, shall deduct ten per cent. from the salary of the employe until the judgment has been fully satisfied.

Oldest Woman Physician.—Dr. Amelia Wilkes Lines, the oldest practising woman physician in this country, both in age and period of practice, celebrated her eightieth birthday last week in her quaint, old-fashioned home at 285 Washington street, Brooklyn. She presided all the afternoon at a reception at which were present four generations of her descendants and about 200 old friends, patients, their children and grandchildren. "Why did I study medicine?" she said. "Ah, I am too old to tell you that. It was a great many years ago—half a century. One can forget many little things in half a century." The bright smile in the keen, deep set, blue eyes was understood when the story was learned. It is a sacred subject with the pioneer woman physician. Mrs. Lines was born on the Isle of Wight, Nov. 21, 1823, on the country estate of her father, Sir William Wilkes. She was one of thirteen children, and she centered her affection on her oldest brother, William. When Mrs. Lines was still a child her brother entered the navy as a surgeon. When she was about twelve years old, Mrs. Lines came to America to visit some of her father's relatives in Painesville, Ohio. She took up her residence in America at the death of her father. When Mrs. Lines was sixteen years old her favorite brother died and was buried at sea. When the division of his property was made she asked only for the medical library, instruments and diplomas of her brother. After returning to the United States with these treasures she devoted much of her time to reading the books. The diplomas, from the University of Paris, the University of Heidelberg, the National College and University of London, she framed and hung in her library. With such surroundings she naturally became interested in medicine.

In 1842 she was married to Dr. T. T. Lines, in Painesville, Ohio. Two years later they came to New York. Mrs. Lines had continued her independent study of medicine and worked much with her husband. In 1850 it was suggested that she attend a medical college. The bare suggestion of such a thing astounded the president and faculty of the National College of Amsterdam, which has since passed out of existence. However, as Mrs. Lines was young and pretty and the wife of a well-known physician, she was finally admitted to the classes, after passing an examination in which she led over eleven men out of fifteen. In 1853 she obtained a license to practice in the State of New York, the first granted to a woman in this State. Some time after this Dr. De Laverne, who was a fellow student with Mrs. Lines, was licensed.

Judicial Ruling for Public School Vaccination.—The Appellate Division of the Supreme Court for the Second Department, sitting in Brooklyn, handed down a decision on Friday last, upholding the constitutionality of the statute enforcing the vaccination of school children. The decision was given by the court in the case of Edmund C. Viemeister of the Borough of Queens, who sought to compel the Board of Education and J. H. Meade, Principal of Public School No. 12 in Queens, to admit his child to school, admission having been denied because the child had not been vaccinated. It was urged on behalf of Viemeister that the statute was void, being contrary to the provisions of the Constitution. In the prevailing opinion Justice Woodward declares that the statute does not violate the Constitution, as it operates equally upon every person who is or may desire to become a pupil in the public schools, and affords equal protection to all, and adds: "However willing we might be to agree with the appellant that the practice of vaccination is attended with dangers and that its efficacy is a matter of uncertainty, these are matters which should be properly addressed to the consideration of the legislative department rather than to the courts." Justice Hirschberg also wrote an opinion sustaining the statute, declaring that it constituted a legitimate exercise of the police power.

A Most Worthy Charity.—Under this caption the *Commercial Advertiser* speaks editorially of the work done at the Lying-in Hospital. By calling public attention to charities of this sort the daily press could do a great deal toward the stimulation of benevolence in New York, if it were so disposed. We quote in full: "We called attention a year ago to the wise and beneficent work which the Society of the Lying-in Hospital of this city has undertaken in the new building donated and equipped by J. Pierrepont Morgan, and bespoke for it the generous aid of all persons of means who desired to help forward a most deserving and well-managed charity. The building has been in use for less than two years, and during that period has demonstrated not only its efficiency but its great need in the community. During the past year over 5,000 women applied for admission, and 600 had to be denied for lack of accommodation. An average of 94 a month were treated in the hospital, and a monthly average of 224, or 2,693 in all, were treated at their homes by the society's out-patient department. Of the total number treated over 3,000 were foreign born and only 716 native born. These and many other interesting facts are published in the society's annual report, a synopsis of which appears in our news columns. The fact in the report which we desire to impress upon our readers—that is, those of them

who are blessed with ample means—is that nearly 1,500 applicants were denied treatment through the society's lack of funds. It is not endowed, and depends entirely upon voluntary contributions for its running expenses. At present it has only one of its three ward floors in operation, because of lack of means. This floor has sixty-two beds. If all three floors could be put in operation the capacity of the hospital would be raised to 186 beds, and there would be no difficulty in treating all applicants and thus making the institution what its founder intended it should be, an ample free maternity hospital for the poor of the city. Last year's available income for running expenses was $29,000, while the actual expenses were $117,000. This deficiency of $88,000 was necessary in order to keep the hospital open. It is a distinct public misfortune that so necessary and so beneficent an institution should be cramped for lack of funds. It should not only receive donations amply sufficient to permit of its operation to the fullest capacity, but an endowment fund which would insure it for all time against need in this direction. No one can read the society's report without being convinced that among all the many deserving charities of this city none is more worthy than this, for none supplies for the poor and helpless aid of a more grateful or a more vitally necessary character."

Manhattan Dermatological Society.—Regular monthly meeting held on Nov. 6, 1903, at the residence of Dr. W. S. Gottheil with Dr. L. Weiss presiding.

Dr. B. F. Ochs presented a case which he termed prurigo. The skin involvement began in early infancy and has shown itself in recurrent attacks every now and then. The patient, a girl of nine years, now presents numerous papules of varying sizes on extensor surfaces of forearms and legs, also on chest, abdomen and back. The skin is thickened and all over, except on the face, small subepidermic papules can be felt. Axillary and inguinal glands slightly enlarged. A marked seborrhea of scalp was a peculiar feature. The flexor surfaces of limbs were likewise involved. Dr. E. L. Cocks mentioned the latter peculiarity as unusual in prurigo. Dr. Pisko inclined to call it seborrheic eczema. Dr. Gottheil stated that the marked seborrhea was a feature of the case and always present. (Saw case previously.) The induration, the adenitis and chronicity favored diagnosis of prurigo. Dr. Bleiman called it a mild case; the classical signs of well-marked prurigo were absent. Dr. Sobel stated present condition could be accounted for by its chronic course and the adenitis no more than would be expected in any chronic eczema. He termed it chronic urticaria. An exact diagnosis was impossible.

Dr. W. S. Gottheil presented a boy of nine years with psoriasis of palms and soles. Other (guttate) lesions were seen on elbows, knees, shins, scrotum and penis; the finger-nails were spotted and brittle. Condition has been present off and on for six years. Dr. Bleiman stated that without other lesions on the body to be guided by, these cases often pass for chronic squamous eczemas. Drs. Ochs and Crary spoke of the rarity of the condition as an isolated lesion. Dr. Oberndorfer had seen such cases. This one was typical.

Dr. I. P. Oberndorfer shows the following case: Young man of twenty-one years noticed an oval patch on inner aspect of right upper arm, about the dimensions of a 25-cent piece, also a smaller one near left groin. These patches had raised scaly margins and clearing centres. They were then regarded as tinea tricophyton, but the development of a general pale-red macular eruption two weeks later on the body, with slight malaise, changed the aspect of the case, and Dr. Oberndorfer regards it as a pityriasis rosea; the former large oval patch being looked upon as an initial herald patch. Scrapings, under microscope, showed spores but no mycelia. Diagnosis concurred in.

Dr. A. Bleiman presented a case of lepra tuberosum. The patient, a woman, aged forty-two years, was born in Russia, came to this country nine years ago and claims the disease first showed itself when one year in this country. The tumors were of varying size and numbered several hundred. The face showed the typical leontine expression. The condition has remained in a stationary condition for the last three years.

Dr. Gottheil presented the following cases: (1) Marked seborrhea involving hairy parts of chin, face, upper lip and eyebrows. A severe eczematous condition is present with involvement of the hair follicles; the latter was considered secondary. Dr. Gottheil was inclined to think that owing to the marked seborrheic element, a lupus erythematosus may subsequently develop. (2) Case of lichen corneus (shown at October meeting). As some members then suspected a syphilitic origin, patient was placed on large doses of KI and Hg, with absolutely no effect. (3) Case of atrophia cutis propria, involving lower limbs. (4) A case of feigned eruption. This patient was shown at two meetings previously and diagnosis of pemphigus hystericus made. Again presented this evening with additional bullous lesions. Dr. Gottheil is able to state that the lesions were self-induced by carbolic acid applications. (5) A case of mycosis fungoides (also previously shown) was presented to show the marked improvement following injections of Coley's mixed toxines; treated since midsummer and received bi-weekly injections of 35 to 45 drops. Marked reaction followed the first few doses. Photographs of his former condition were shown and, compared with the subject, it is seen that many of the tumors have disappeared and the subjective symptoms greatly improved. The tumors disappear by absorption. Drs. Pisko and Cocks were skeptical as to the ultimate prognosis. Dr. Cocks adding that he also saw good results in the beginning with the X-ray which later had to be discontinued. Dr. Sobel said to relieve subjective symptoms, much must be accomplished. (6) A case of ulcerative luetic, skin lesions in a female patient, whose initial lesion was contracted about six months ago. The wrists showed peculiar verrucous-like lesions.

Dr. R. Abrahams shows a case of tertiary ulcerative syphilis. About eighteen months ago patient had "some trouble" with her left eye and eyesight temporarily destroyed; also had sore throat and severe headaches. Never noticed any lesions on skin, nor gave history of chancre. Patient seen two weeks ago and shows total destruction of the nasal septum with a beginning ulceration and destruction of the palate.

Dr. B. F. Ochs presented this case for diagnosis: A young woman shows a globular mass just in front of right ear; movable and non-adherent; apparently no connection with the parotid; of four years' duration and only recently tends to increase in size. Diagnoses of fibroma lipoma, chondrosarcoma, etc., were made. A second case by Dr. Ochs, was a girl aged thirteen years, with scratch lesions on face and arms. The history of case strongly suggested self-infliction.

PHILADELPHIA.

The Henry Phipps Institute Lecture.—The second of these lectures will be delivered by Dr. William Osler on Thursday evening, December 3, at half-past 8 o'clock, in the Auditorium of Witherspoon Building, Walnut and Juniper streets, Philadelphia. The subject will be: "The Home in Relation to the Tuberculosis Problem."

The Philadelphia Neurological Society.—At the last meeting of this society, held Tuesday, November 24, Dr. M. Allen Starr, of New York, read a paper entitled "Is Epilepsy a Functional Disease and is it Ever Curable?"

Samaritan Hospital Changes.—Dr. W. Wayne Babcock succeeds Dr. E. W. Holmes, who recently resigned, as Surgeon-in-Chief. Dr. Wilmer Krusen, who has resigned the position of instructor in Gynecology at the Jefferson Medical College to accept the professorship of Gynecology at the Temple Medical College, will be the Gynecologist to the hospital. Dr. F. C. Hammond, who also resigned from Jefferson, will be Dr. Krusen's assistant at the College and Chief of Clinic at the hospital.

Suppression of the Begging Nuisance.—Many cities were represented at a conference to discuss the mendicancy evil and the best methods of dealing with it, held last week under the auspices of the Philadelphia Society of Organizing Charity. An idea of what Philadelphia is doing with the begging classes was given by Police Captain John B. Taylor, who said in part that "From 5,000 to 0,000 vagrants are arrested in Philadelphia every year, and 95 per cent. of them are foreigners." The public itself is largely to blame for the tramp evil through its liberality, but the easy method of conveyance offered by the railroads seems to be the chief method of making tramps. Cheap novels are also to blame, and nearly every boy brought into a police station has at least one on him. In the last five years we have arrested 21,640 tramps. If the public gave 5 cents a day to each of these for that period, the sum would be $300,000, which in the hands of this society would work wonders. One of the results of the conference was the appointment of a committee to co-operate with the railroads in securing some means of driving the tramps from the trains.

Members of Religious Sect Vaccinated.—The headquarters of the Church of God, a negro sect, among whose members five deaths from smallpox have recently occurred because their leaders forbid vaccination, was raided November 20, and 423 persons were vaccinated. Twenty policemen accompanied the vaccine physicians and controlled the excited negroes while they were vaccinated. It has been impossible to make headway in vaccination before, as the people would flee whenever a vaccine physician appeared. Another raid will be made on the church in a short time, as it is believed that a hotbed of smallpox has been located.

Disease Increases as Schools Open.—Important statistics were given at a meeting of the committee of the Public Education Society held recently at the De Lancey school, 1420 Pine street, to arrange for the public meeting in favor of medical inspection of schools, to be held there December 3. Reports of the Bureau of Health for the past four years were presented to show the influence of the schools on the incidence of diphtheria and scarlet fever. The average number of cases per school period were: Diphtheria, 3,895; scarlet fever, 3,684. Average number of cases in vacation periods were: Diphtheria, 2,379; scarlet fever, 2,331. This shows an increase in diphtheria of 39 per cent. and in scarlet fever of 37 per cent.

CHICAGO.

For Model Hospital.—A hotel-hospital, to cost $250,000, will be erected by St. Luke's Hospital in connection with that institution's buildings at 1426 Indiana avenue. The purpose is to supply Chicago with a hospital which will invite the wealthy, not only in this city, but in other cities, to become its patients. Suites will be provided, so that servants can attend the sick persons, and the model will be that of a modern hotel. The end sought, however, is one of extensive charity. By the profits from the patronage of the wealthy the hope is to be able to operate the whole of the existing hospital as a free institution. The project in detail was conceived less than a fortnight ago, but through the efforts of Charles W. Brega, Mrs. J. Ogden Armour, Mrs. John Crerar, Mrs. Marshall Field, Jr., Mrs. Frank O. Lowden, Mrs. Stanley Field, Mrs. Henry C. Dibblee, and other active friends of the institution so much has been done in the interval that the architectural plans already have been drawn. Ground has been bought extending from Indiana avenue through to Michigan avenue, and the new edifice will front the latter thoroughfare. In the new building space will be set aside for free beds, and a wing of the structure will be put to charitable uses if endowments can be secured. The children, rich and poor alike, will have the top floor of the new hospital and likewise its roof, which will be laid out as a roof garden. The workers behind the movement have the promise that when $100,000 has been raised contributions to supply the balance will be made by different wealthy men and women. Of the $100,000 the officials of the hospital have received $75,000, of which $45,000 came as a bequest. Society plans to contribute the lacking $25,000 by giving a charity ball at the Auditorium, which will be a *bal poudre*.

Favor Garbage Incineration.—Incineration rather than reduction of garbage is favored by some of the members of the city council finance committee. After a long discussion it was decided to call upon Commissioner Blocki to suggest an ordinance providing for a separation of refuse as follows: Vegetable and animal matter, combustible material, and ashes. Without separation none of the propositions could be undertaken by the competing companies, according to Alderman Raymer. The question regarding a contract for more than one year was set at rest by the quoting of Judge Tuley's decision adverse to a previous garbage contract for five years. Commissioner Blocki said the city could not pay for reduction and must give the work to a contractor. Street Superintendent Solon said the cost would be $1,000 a day for delivering the separated refuse to stations located by any company. If separation is enforced it is considered that the city may enter into a contract for the reduction or incineration of refuse.

To Assist Hospital Warden.—Dr. John B. Colwell was appointed last week by President Foreman of the county board to be assistant warden of the Cook County hospital. Dr. Colwell passed at the head of the list of applicants at the civil service examination held on October 29 to fill this position. Dr. Colwell is thirty years old, a graduate of Illinois Wesleyan University and Rush Medical College.

New Maternity.—There has just been completed as an adjunct to the Mercy Hospital, what is called the Mercy Maternity. It is a detached building and this institution will be under the direction of Dr. Joseph B. De Lee.

Wesley Hospital Receives a Gift.—Rev. R. D. Sheppard has offered $35,000 to this hospital toward paying off its indebtedness, provided the remainder,

$25,000, is raised within two years. The conditions have been accepted by the trustees of the hospital and they report that $17,000 of the necessary amount is already in sight.

Changes in the Faculty of the Northwestern University Medical School.—A meeting of the board of trustees of this institution was held November 17, when Dr. Chas. L. Mix was elected Professor of Physical Diagnosis, to fill the vacancy left by the resignation of Dr. Geo. W. Webster. Dr. Frederick Menge was elected Assistant Professor of Laryngology and Rhinology, and Dr. William W. Mann was elected Assistant Professor of Ophthalmology and Otology.

CANADA.

Changes in Queen's Medical Staff.—At a meeting of Queen's Medical Staff, held on Nov. 19, the resignation of Dr. Herald as Secretary-treasurer of the Faculty was accepted and Dr. W. T. Connel was appointed to the vacancy. At the same meeting Dr. A. R. B. Williamson was appointed Lecturer on Medical Jurisprudence and Toxicology.

Officers of the College of Physicians and Surgeons of the Northwest Territories.—The following officers of the College of Physicians and Surgeons of the Northwest Territories were elected at a meeting, held at Regina on Sept. 15: President, Dr. M. M. Seymour; Vice-President, Dr. A. B. Stewart; Registrar, Dr. J. D. Lafferty, Calgary; the Executive Committee, Drs. Brett and Kennedy.

New Hospital Opened in New Brunswick.—The Town of Moncton has now a fine new modern hospital, recently built at a cost of $20,000. It was formally opened on Nov. 11, by Premier Tweedie. The hospital is one of the finest institutions of its kind in the Maritime Provinces. The operating room is fitted up with all the latest appliances.

The Toronto Medical Faculty Seeks Better Hospital Facilities.—The Medical Faculty of the University of Toronto and the Boards of Trustees of the principal hospitals are at present negotiating with a view to arranging for accommodation and regulations to secure better hospital facilities for medical education. A need along those lines has been felt for some years and the union of the two medical faculties has paved the way for concerted action by the University and the teaching branch of the medical profession. A committee was appointed consisting of the Vice-Chancellor, Chief Justice Moss, President Loudon, Mr. Irving Cameron, Dr. Primrose, Dean Reeve, Dr. Bingham, Dr. McPhedran and Dr. J. F. W. Ross (Chairman). They drew up a statement embodying the changes and improvements desired and presented it to the Board of the General and St. Michael's hospitals. At the meeting with the Board of the General Hospital, interest in the proceedings was increased by the presence of Mr. Rose Bradford, an eminent physician of University College, London, England, who addressed the Board upon hospital work in London. The proposals dealing first with the subject of house staffs were briefly as follows: That the house staff be large enough to carry on the work efficiently, that one member of each staff be detailed to do clinical laboratory work exclusively, that the staff be divided into seniors and juniors and the seniors retire every six months; that the duties of the house staffs be defined by new rules, that no fee be paid any member of the house staffs by physicians or patients, that each hospital Board should appoint an official anesthetist. Then with a view to increasing the material for clinics, it was urged that all patients in public wards be placed in charge of the clinical staff. The material at present available, the committee stated, for bedside clinics, was deplorably limited. It was proposed that a committee be appointed by each staff to supervise hospital admissions. Closely related to the question of clinical material is the out-patient department. The report stated that a committee of the faculty recently visited New York, Boston, Philadelphia, Chicago, Montreal and Baltimore and reported fully on the value of well-equipped out-patient departments. The out-patient departments connected with the Toronto General and St. Michael's hospitals lack proper organization and must be considered as valueless in their present state. In the General Hospital the rooms are too small, the facilities for handling patients are too meager and the heating in winter is so poor that the health of the patients, the students and the staff is endangered thereby. Better facilities for the study of pathology were asked by the taking of pains to increase the number of autopsies and the keeping of proper records. In the Children's Hospital it is said nearly all the regulations asked for have been in force for considerable time.

Obituary.—Dr. Charles Marshall, Governor of the College of Physicians and Surgeons of the Province of Quebec, which office he has held for two years, died in New York on Nov. 13, of apoplexy. He was a resident of Huntingdon, Quebec, and held degrees from McGill and Edinburgh Universities.

Dr. J. A. E. Steeves of St. John, N. B., died at Phoenix, Arizona, on Saturday Nov. 14, the cause of death being heart trouble. Deceased was forty-two years of age and was considered a leading authority on nervous diseases in the Province of New Brunswick. For many years he acted as assistant to his father, the late Dr. J. T. Steeves, who was Superintendent of the Provincial Lunatic Asylum. He was a graduate of the University of New Brunswick and of Bellevue College, New York.

GENERAL.

Chair of Medical History for University of Maryland.—The University of Maryland has established a chair of the history of medicine, the first of its kind in this country. The occupant is Dr. Eugene F. Cordell of Baltimore. He has written for the *Johns Hopkins Hospital Bulletin* a very interesting essay on the "Doctors and Medicines of Horace."

Typhoid at Williams.—The danger of a typhoid fever epidemic at Williams College is believed to have passed. President Henry Hopkins said last Monday: "I do not anticipate further cases of typhoid among the students. Dr. George Soper, of New York, who had charge at Ithaca during the typhoid epidemic at Cornell, is in charge of the cases here. Everything that could be done to prevent contagion is being done, and it is felt that the situation is well in hand."

Cocaine Habit in Washington.—In his annual report to the District Commissioners Major Sylvester, superintendent of the Washington police force, says that the cocaine habit is greatly on the increase among the lower classes of the capital city and that vigorous measures should be taken at once to check the evil. He says: "It (cocaine) is bound to become a destructive agency unless something is done to prevent its sale by druggists. Two years ago the drug was hardly known, but the habit has grown, and the wreck of lives which accompanies the use of this deadly drug and its sister drugs, morphine, chloral and other pharmaceutical preparations and even patent medicines, is becoming apparent." He also calls attention to the fact that the police are

powerless to raid the opium joints save on the charge of disorderly conduct, and that the fine for this misdemeanor is inadequate to check the evil.

Surgeons' Needles Not Free of Duty.—That "stitching together portions of the human anatomy is not commercially known as hand sewing" is the pronunciamento made by the Board of United States General Appraisers, in overruling a protest against the assessment of surgical needles at 25 per cent. as "needles not specially provided for." A. J. Woodruff & Co. and F. A. Koch & Co., the importers, claimed free entry for them under the clause in the tariff law providing for "needles, hand sewing and darning."

Some Facts about the "N-rays."—In the current number of *Harper's Weekly*, Louis Bell, Ph.D., writes in a very interesting and scientific way concerning the newly-discovered and so-called "N-rays." He says in part: "Therefore the very recent discovery by M. Bloudlot of a new variety of light, which behaves as light ought and yet displays some rather sensational properties, is no small comfort to the puzzled investigator. M. Bloudlot started in to investigate the X-rays, using as an indicator a tiny, faint, electric spark from a little induction coil. The spark flashed more brightly when the X-rays fell upon it, and by its aid he was enabled to measure their velocity and thus to clear up much of the mystery which had surrounded them. Presently he found that with the X-rays appeared a new kind of radiation which obeyed all the ordinary laws of light, although the visible light had already been filtered out of the beam by an opaque screen. The new rays penetrated freely aluminum foil, black paper, wood, and other apparently opaque substances, but were regularly reflected, refracted, and polarized. They were so powerfully refracted by a quartz lens or prism as to appear, at first sight, denizens of the extreme ultra-violet, perhaps only a half-millionth of an inch long. The new radiations are grouped by their discoverer under the tentative name of N-rays. In their properties they are unmistakably light, but of as yet unknown wave-length, and possessing properties which verge upon some of those ordinarily ascribed to radio-activity. Their enormous refrangibility and their powerful action upon electric discharges would naturally suggest a very short wave-length, but their free radiation from comparatively low temperature sources points in exactly the opposite direction. The mere matter of high refrangibility does not decide the question, for substances refract because they slow down the light waves, and disperse the various colors because they slow down and absorb one wave-length more than another. Great local absorption and great dispersion go hand in hand, and they are frequently associated with extraordinary transparency for some particular colors, as if all the opacity of the stuff were concentrated against a single enemy. Thus it appears that while a substance which is fairly transparent to light in general always disperses that light rainbow-wise, with the colors in the order red, orange, yellow, green, blue, indigo, violet, a prism of strongly colored material may mix up the rainbow order in the most shocking fashion. The great refrangibility of the N-rays does not, therefore, prove that they are of short wave-lengths, since quartz has powerful local absorption enough at, unhappily, each end of the spectrum, extreme ultra-violet and extreme infra-red, to account for the most erratic freaks of refraction. Really one sort of refraction is as orderly as the other, in the general consideration of the subject, for, to generalize radiation, there is probably nothing wholly opaque or wholly transparent. We do not know the nature of the complete relation of any one substance to all kinds of light, but the discovery of the N-rays is likely to stretch far the bounds of knowledge."

New Stamford Hospital Gift.—Commodore James D. Smith, president of the Stamford Hospital, announced Nov. 18, at the commencement exercises of the hospital training school for nurses that Robert M. Bruce of Greenwich, who has recently made several donations to that town, had given $10,000 to the Stamford Hospital. This is the first public announcement of the gift. It was learned to-day that it was made over a year ago and that Mr. Bruce requested that no public announcement be made. Mr. Bruce has recently donated $100,000 for a new town hall in Greenwich and has also founded an isolation hospital there.

Quarantine against San Antonio Raised.—Gov. Lanham issued a proclamation Nov. 18, raising the State quarantine against San Antonio, which has been in effect for several weeks because of the appearance of a few cases of yellow fever in that city. Th temperature was down to thirty degrees there Nov. 17, which, it is thought, makes it impossible for new cases to propagate.

Marmorek's Serum in Disfavor.—According to the *Sun*, a majority of the physicians of Paris are skeptical concerning the merits of Dr. Marmorek's tuberculosis serum. Some of the physicians who watched certain experiments say that they were entirely unsuccessful. Reports from Breslau also seems to confirm this unfavorable judgment.

Hospital Reforms in Paris.—The City of Paris is about to spend 45,000,000f. on the work of reconstituting its hospitals. For the past six months a commission has been sitting to investigate the needs of each of the existing hospitals of the capital, and their report shows that but for the enormous strain placed upon their accommodation by tuberculosis patients the number of beds now existing would be sufficient. It has therefore been decided to set apart the sum of 7,500,000f. for the construction of a special hospital for this disease, and to forbid the reception of consumptive patients in the general hospitals for the future. The largest proportion of the proposed outlay will be spent on the Pitié, which, dating from the year 1612, is badly in need of rebuilding. A temporary building will be placed near the huge Salpétrière for the accommodation of the 800 beds of the Pitié during the work of construction, and when finished this hospital will be one of the most remarkable group of such buildings in the world. Every modern invention for the alleviation or cure of disease will be installed with the greatest perfection attainable, and it will even be provided with its own model school of nursing. Two millions will be devoted to the Salpétrière, which is almost a town in itself, and in the front rank of improvements at this and other Paris hospitals is placed the installation of proper laundries. The choice of a site for the hospital for contagious diseases is proving troublesome to the authorities, as the suburbs almost unanimously refuse to have such an institution in their midst.

The Senn Prize Essay for 1904.—The Committee on the Senn Medal begs leave to call attention to the following conditions governing the competition for this medal for 1904: A gold medal of suitable design is to be conferred on the member of the American Medical Association who shall present the best essay on some surgical subject. The award will be made under the following conditions: (*a*) The name

of the author of each competing essay must be enclosed in a sealed envelope bearing a suitable motto or device, the essay itself bearing the same motto or device. The title of the successful essay and the motto or device is to be read at the session at which the award is made, and the corresponding envelope is to be then and there opened and the name of the successful author announced. (*b*) All successful essays become the property of the Association. (*c*) The medal shall be conferred and honorable mention made of the two other essays considered worthy of this distinction, at a general meeting of the Association. (*d*) The competition is to be confined to those who, at the time of entering the competition, as well as at the time of conferring the medal, shall be members of the American Medical Association. (*e*) The competition for the medal will be closed on, and no essays received after, March 1, 1904. Communications may be addressed to any member of the committee, which consists of the following: Dr. James H. Dunn, Chairman, Minneapolis; Dr. M. L. Harris, 100 State street, Chicago; Dr. Floyd McRae, Atlanta, Ga.

Drug Adulteration.—The *Druggist's Circular* of this city in their October issue comment editorially on this subject with such good sense that we desire to give their argument wider publicity. They write: "Forewarned is said to be forearmed. We trust this will prove to be the case with American pharmacists in relation to pernicious and absurd legislation by future legislatures in regard to the placing of responsibility for the adulteration of drugs. The experience of New York with its Bostwick-Dowling Bill should not soon be forgotten. There is every indication already manifest of the determination of the foes of pharmacy to renew the battle in the near future, not only in the State of New York but in other States as well, for the passage of laws that will place impossible tasks and unjust responsibility upon the shoulders of pharmacists. Now is the time to prepare means for the defeat of such efforts and to study the situation in order to have an intelligent comprehension of the charges to be met and the sophistry to be refuted in order to win public sympathy."

"The two weapons depended upon to frighten the public, in order to get them to support such dangerous legislation, are the claims that pharmacists everywhere and in great numbers substitute harmful and cheap for harmless but dear remedies and adulterate, in order to cheapen, the official remedies. To the pharmacist the charge seems too absurd to attempt a refutation but to the public, through knowing nothing definite about the facts, it appears to be reasonable and possibly true. For a long time sensational reports of adulterations of drugs have been published, year by year, by boards of health. The cumulative effects of these reports is beginning to seriously influence the minds of the people so that it is getting to be an easy matter to gain their approval for any restrictive measure that may be proposed. They do not, nor would it be sensible to expect them to, distinguish between adulterations and adulterations. There really should be no need to make such a distinction, but the flexible qualities that have come to be attached to the meanings of that word have rendered it imperative that we know just what a writer means when he uses it, or we will be as badly befogged as he sometimes wishes us to be. By the definition at present attached to it in the reports of some boards of health, the manufacturer has yet to be born who could supply the market with unadulterated goods.

"This may seem to be an exaggerated statement, but it is nothing of the kind. Manufacturers of jellies and fruit juices have been haled before courts of justice and condemned for allowing their products to contain traces of salicylic acid, and now it turns out that the finding of such traces was evidence of the absolute purity of the goods. There is scarcely a fruit that grows which does not, according to the latest discoveries of research science, contain salicylic acid. The laws of several States have made the United States Pharmacopœia the standard of quality for drugs. In such States the chemist of the board of health is bound by this law and his findings could convict every pharmacist in his State for adulterating caffeine citrate. Not a sample can be found in the world that is not adulterated according to this definition of the word adulterate. There has never yet been made a single sample that agrees with the law and probably never will. With three parts of water none of them form 'a clear syrupy solution' which they should do in order to be legally unadulterated. With carbolic acid the Pharmacopœia makes the coagulating of albumin show the absence of creosote, when in fact it would show its presence. In so common an article as lard, the Pharmacopœia declares that it should be insoluble in water, when in fact all lard is slightly soluble in water. Who can find a sample of lard that is unadulterated according to the law? The Pharmacopœia fixes the specific gravity of white wax at 0.965 to 0.975. The actual wax of the world's market is 0.960 to 0.964, according to the reports of experts. All white wax is, if legally considered, adulterated.

"Turning our attention now to the manufacturers we find that they will not or cannot supply the trade with such goods as the Pharmacopœia calls for. When the retail druggist orders alum, even for prescription use, he receives from firms with the very highest character, not the potassium alum of the Pharmacopœia, but ammonium alum that is a wholly different chemical substance. In such a case who is responsible when absolute substitution occurs? Is the Pharmacopœia to blame or are the manufacturers to blame? If milk sugar darkens with the sulphuric acid test because traces of the string upon which it was crystallized adheres, should the manufacturer be accused of adulterating? The preparation is adulterated if we accept the present claims of the law, of boards of health and of sensational reports that now so successfully befog the public. If manufacturers of glycerin, who are no way connected directly with pharmacy, ignore the Pharmacopœia and supply an article that will not withstand our test for fatty acids (as found by La Wall and Pursel), are the pharmacists to blame, is the Pharmacopœia to blame, or are the soap and candle makers to blame? The retailer is, in this case, compelled to sell and use adulterated goods or close his store.

"If the mountain will not go to Mohammed, would it not be well for Mohammed to go to the mountain. The pharmacopœial standard can be lowered. Among many other articles that occur to us now as being exceedingly difficult to obtain in the market, of full pharmacopœial quality, are asafetida, iodine, effervescent citrate of magnesium and nitric acid. In the case of the effervescent salt mentioned, almost all that can be bought is reported to be sulphate and not citrate of magnesium. Who is to blame for the substitution?

"Then there are the analysts themselves. Again and again it has been shown that samples of pharmacopœial drugs when examined by different analysts differed wholly in their qualities in accordance with who happened to be the examiner. His careless work or his ignorance of how to do such work has been a frequent source of trouble. Adulterations of this imaginary kind figure as prominently before the public as deceiving scarecrows as does the work of the most crudite and painstaking who find no such adulterations. In country groceries there are paregorics, essences of ginger, and various tinctures that are fearfully and wonderfully made.

Few of them ever saw a pharmaceutical laboratory and most of them were made by men who know nothing of Pharmacopœias or Dispensatories. Analyses of such concoctions as these swell the flood of damning evidence ued to show the public that restrictions are required to keep pharmacists straight.

"No report on adulterations is worth the paper it is written upon unless it shows that the analytical work was done by a skilful man, that it was checked by a second man who knew nothing of the work of the first, that it distinguished between deliberate sophistication (which is the only real adulteration) and mere impurities incident to manufacture, that the samples were called for from a drug store on prescription and not on five cent orders, that the buyer was a reliable and truthful person, and that every precaution possible was taken to see that there was no mixing of the sample of one house with the sample of another.

"If five cents worth of ether is asked for by the collector the chances are that the druggist presumes he wants it for a toothache application and he gives the 1880 article because he can afford to supply more for the money and thus please his patron. If saffron is asked for, carthamus is almost certain to be supplied instead of crocus. An order by prescription would, at the same store, be certain to get the official articles. To call for potash, soda, sulphur, salts of various metals, and many articles kept for commercial use in one quality and for prescription use in another quality, will bring the commercial grade or the medicinal grade to the purchaser in accordance with the method he pursues in making his purchases.

"Is it fair or just to charge to adulteration goods short of pharmacopœial requirements when such goods were not sold as of standard quality? Yet this is just what sensation loving analysts are frequently doing much to the injury of the good name of pharmacists as a class."

Obituary.—Dr. Allen Hazen of New York, died last Tuesday, after an operation for appendicitis. Dr. Hazen was graduated from the College of Physicians and Surgeons of New York in 1895, and was a member of the Society of Alumni of the City Hospital, where he served as resident physician for two years. He had been on the Board of Medical Examiners of the Mutual Life Insurance Company of New York for about five years.

Dr. Samuel Talmage died at his home, 22 Schermerhorn street, Brooklyn, on Friday. He was born in 1831 at Monte Verde, N. J., and was a son of Major Thomas Talmage of that place. He graduated from the University of New York and began practicing as a physician in Brooklyn thirty-eight years ago. Dr. Talmage was house physician of the Gates Avenue Homeopathic Dispensary and consulting physician of the Brooklyn Nursery. He was a member of the Kings County Medical Society. His wife, a son, and a daughter survive him.

Dr. Herbert A. Starkey, owner of the Sloatsburg Ferry, died suddenly yesterday at Kingston, N. Y., aged thirty-five years. He was a son of Dr. David Starkey of Philadelphia, and formerly surgeon for the Pullman Company, at Pullman, Ill.

Dr. Charles A. Traester, a physician in Williamsburg, died last week in St. Catherine's Hospital of injuries he received on Wednesday, when he fell off a Fourteenth street car. Dr. Traester was born in Hesse-Darmstadt, Germany, sixty-four years ago, and came to America when he was twelve years old. He studied medicine and chemistry and began his business career in the Fourteenth Ward section of Williamsburg.

CORRESPONDENCE.

MEXICO CITY AND YELLOW FEVER.

To the Editor of the Medical News:

Dear Sir: Some time since, I noticed in your general news items, the statement that "yellow fever is prevalent in the City of Mexico." As this is incorrect I knew you would be glad to have it corrected. I believe I am absolutely within the bounds of truth when I say that a case of yellow fever has never originated in the City of Mexico, in the Federal District or on the whole plateau of Mexico, where the altitude ranges from 5,000 to 8,000 feet.

During my residence in this country, over 4½ years, I have known of only two cases in the city; in both cases the disease originated in yellow fever districts, one coming from Vera Cruz and the other from Muna Laredo.

It would be impossible, I believe, for the disease to flourish here, as the conditions are not favorable for its propagation. I shall be glad if you will correct the statement, as it might have an unfavorable effect on the numerous visitors to Mexico. The City of Mexico, since the drainage of the city has been perfected, ranks well in sanitation and general health conditions.

Very truly yours,

A. H. Deekens.

SOCIETY PROCEEDINGS.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held October 6, 1903.

The President, Pearce Bailey, M.D., in the Chair.

Partial Paralysis of the Platysma Myoides Following Typhoid.—Dr. Edwin G. Zabriskie presented a girl of seventeen years, a cigarette maker by trade. Following an attack of typhoid fever, five years ago, a sinus formed in connection with the lower jaw on the left side. On coming under observation recently, it was found that there was paralysis of the left platysma myoides, and that this muscle failed to respond to electrical stimulation.

Extirpation of Gasserian Ganglion for Neuralgia.—Dr. William Hirsch presented a woman who had been operated upon one year ago for the relief of trigeminal neuralgia by the removal of the Gasserian ganglion. Microscopical examination showed that the ganglion had been completely extirpated. The neuralgia had been completely relieved. There was no analgesia anywhere. Remak claimed that one result of paralysis of the trigeminal nerve was a pushing of the lower jaw over toward the affected side, associated with partial subluxation. This patient showed only a slight deviation. In this woman the perception of a sweet taste was somewhat uncertain, that for sour was lost, and the taste for bitter was perverted. The electrical reaction of the muscles on the affected side was perfectly normal, but the effect of the current as regards taste had not been noted.

Congenital Multiple Angiomata.—Dr. M. Abrahamson presented a boy of fifteen years, born in Russia after a very prolonged labor. He was cyanotic at birth, and was resuscitated with difficulty. When two months old the mother first noticed a small mass behind the left ear; another appeared on the left side of the neck when two years old after a fall. Since then new ones had appeared. Epistaxis had been frequent, but there had been no hemorrhages from the other mucous membranes. There were a number of these swellings, or angiomata, notably in the tongue and lip. There was an angioma in the retina of the right eye. There were

apparently no angiomata in the liver and spleen. This boy showed both of Virchow's types—cavernous and fissural. The course of the disease in this case was not in accordance with any of the theories that had been advanced to explain such cases.

Dr. William M. Leszynsky presented a boy of eleven years, who had been born at full term by forceps without suspended animation. He had never had convulsions. He seemed perfectly well up to nine months ago, when he began to bend forward when walking. When first seen, on March 9, 1903, his general health was found to be good. The knee-jerks were unobtainable, and the limbs became rigid in various positions. No evidence of organic nervous disease was discovered, and a few days later the knee-jerks were elicited. He was discharged after sixteen days, walking perfectly well, but he was readmitted to hospital in July in a condition similar to the original one. The speaker believed at first that the attitude was imitated, and that subsequently it became a habit. Although the boy walked in a doubled-up position with the head almost touching the floor, he could hang upon a horizontal bar without special difficulty. When in bed, he lay like other children. There were no objective sensory disturbances of hysteria. For want of a better name he would call it a case of hysteria. This habit had persisted, and remained even when he was not observed. There was, of course, exaggeration and a certain element of simulation.

The Movements of Superior Intercostal Muscles in Hemiplegia, and the New Hemiplegic Symptom.—Dr. L. Pierce Clark presented this paper. He said that Gowers expressed the generally accepted opinion regarding the respiratory movements in hemiplegics when he said that in ordinary respiration the two sides of the thorax moved equally, but that in extraordinary respiration there was often less expansion on the paralyzed side. In 1895 Hughlings Jackson stated that in hemiplegics the superior intercostal movements were greater on the paralyzed side during ordinary or automatic respiration, whereas in forced respiration the movement was greater on the sound side. The speaker said that he had examined with regard to this point 161 cases of hemiplegia, with the result that this sign was found to be uniformly present. In destructive lesions of the internal capsule causing hemiplegia the cortical inhibitory control over the medullary respiratory center of the paralyzed side was largely destroyed, and, accordingly, the inhibited medullary center acts excessively in automatic respiration. The experiments of W. G. Spencer demonstrated the presence of an inhibitory center situated just outside of the olfactory tract, anterior to its junction with the temporosphenoidal lobe, and of an acceleration center apparently located in the posterior portion of the sensory-motor area of the cortex. The location of the inhibitory center would lead one to expect it to be damaged in vascular lesions, especially of the middle cerebral, affecting the integrity of the capsular fibers. The fact that the superior intercostals of the paralyzed side were innervated through cerebral fibers ending on spinal centers in the anterior horns of the cord, and the more or less marked damage of the same would account for the general motor loss of volitional acts on the hemiplegic side. The respiratory center could be demonstrated in all muscles bilaterally susceptible of both automatic and volitional movements.

The Advisability of Supplementing the Words Degeneration and Degenerate by Deviation and Deviate.—Dr. G. L. Walton, of Boston, presented a paper with this title. The definitions given by a number of well-known writers were cited to show that a degenerate was one exhibiting certain deviations from the normal type. The words "deviation" and "deviate," therefore, seemed to him to be more accurate, and less objectionable because independent of all theories. Referring to the hereditary aspects of the question, attention was called to the tendency of similar parents to produce inferior degenerates and of dissimilar parents to produce beings superior to their immediate ancestors. The term "degenerate" he would limit, so far as possible, to the lowest grades of constitutional defect, and avoid altogether the anomalous term "superior degenerate."

Dr. Hirsch said that about ten years ago he had himself pointed out the apparent misuse of the term degenerate. The definition which he had given at the time of degeneration was, "a mild development of the psychical organ." The term, superior degenerate, was not originally applied in the way in which it was referred to in the paper, *i.e.*, a degeneration of a lesser degree, but rather that the higher faculties of certain individuals were degenerated. The word "deviation" unfortunately was not one which could be used internationally, and this, in itself, constituted a serious objection to its adoption, although there could be no doubt about the term being superior to degeneration.

Dr. C. L. Dana said that he was very much in sympathy with the purpose of this paper, and that his own views regarding degeneration did not differ very much from those of the author. He understood that Dr. Walton wished to continue the use of the term degeneration in connection with somatic changes. About eight years ago, in an address before the Academy of Medicine, the speaker said, he had defined a degenerate as "one who differed from the average standard of the family from which he sprung," and suggested that there were two classes of degenerates to whom the term could be applied without any implied opprobrium. One of these was the class spoken of in the paper as the "superior degenerate." He thought the term "variation" could be very properly applied. He was of the opinion that in the superior degenerates and in the inferior degenerates, and in the imbeciles, and even in the higher types that there was a degenerative tendency in the germoplasm, and that the family was very apt to die out.

Dr. B. Sachs thought that if degeneration was too severe a term, deviation was too mild a term, for it could not be looked upon as representing anything morbid. After all, the only objection to the term, degeneration, was in its application to the so-called superior degenerate, and the vast majority of the persons to whom the term degenerate had been applied showed a distinctly downward tendency.

Dr. Joseph Collins said that the substitution of terms suggested by the author of the paper did not seem to him a wise move, but an effort to incorporate those terms into medical literature to express certain conditions often included under the terms degeneration and degenerate should be encouraged. Because some of the incident newspapers saw fit to use the term degeneracy merely as a synonym for moral profligacy, and particularly sexual perversion, was no reason for the scientific world to feel called upon to change this term. Even in scientific circles it seemed to him that the term degenerate was used altogether too frequently. He believed that the usual tendency in both superior and inferior degenerates was downward from the normal moral standard, and that this notion was rightly reflected in the definitions quoted.

Dr. Edward D. Fisher said that his understanding of the term degenerate carried with it the idea of a departure from the moral standard, although there were possibly other forms of degeneracy in which the moral aspect did not enter. The term deviation seemed to him entirely inadequate.

Dr. Walton, in closing, emphasized the fact that it was intended, not to displace degeneration, but to furnish a synonym which might prove useful. He saw no harm in the milder word sometimes being used to include the more severe, just as delinquent was meant to include criminal. He agreed with Dr. Sachs that deviate was too mild a word to supplant degenerate, and this was not his intention. If no objection were made to substituting deviate for superior degenerate, the ground would be practically covered. He agreed with Dr. Collins in deploring the elaboration in literature of the individual moral deviations, but this tendency could not be prevented. If we could limit our use of these terms to scientific circles, the word degenerate, as understood in those circles, would satisfy all requirements, but the subject had now become of general interest.

A Case of Cerebral Infantile Diplegia or So-called Muscular Pseudohypertrophy.—Dr. Nathan reported this case. The patient was a large, well-developed boy of ten years. On standing, there was decided lordosis. When lying down, he was apparently unable to raise himself. There was good power in the hands, and the thighs could be flexed without difficulty. He walked with the typical spastic gait. The knee reflexes and the electrical reactions to both currents were exaggerated. The mental development was nil, largely owing to neglect. The case differed from those of pseudohypertrophy in infantile paralysis previously reported in several respects. This was the only case on record, so far as known, in which pseudohypertrophy occurred in a case of so-called spastic spinal paralysis; all previously reported cases were hemiplegic. There were no athetoid movements in this case. The measurements showed that besides the pseudohypertrophy there was enlargement of the left thigh and arm.

Dr. L. P. Clark said that the condition had not been first described by him, as stated in the paper, but by Bernhard, about twenty years ago. Gowers had reported a number of cases about one year later. The case reported here was evidently quite rare. Athetoid movements were noted in only about one-half of the cases, and neither this nor spasticity was sufficient to account for the cases, because this was also frequently absent

Dr. C. L. Dana said that he did not think the diagnosis could be made solely upon the large calves, because this was frequently present in diplegics.

Dr. B. Sachs said that he quite agreed with the last speaker regarding the enlargement of the calves, and suggested that the only positive way of making the diagnosis would be by excising a piece of muscle and demonstrating the characteristic changes.

Dr. J. Collins said that if the contention were that pseudohypertrophic paralysis with spasticity had not been recognized, he would say that during the summer there had been in his clinic a case of typical pseudohypertrophic paralysis in which spasticity was apparently as great as in the case just reported. Although there was profound spasticity, particularly of the adductors, there was no exaggeration of the knee-jerk, and no Babinski—in other words, there were no indications of disease of the pyramidal tracts. The case had been looked upon as a peculiar form of obesity before coming to the clinic.

Dr. Nathan said that it had not occurred to him that there was any doubt about the diagnosis. The history was typical of cerebral paralysis. The child was born asphyxiated, and had convulsions repeatedly up to the seventh year. It began to walk when three years old, and had always walked with difficulty. The only symptom of pseudohypertrophic paralysis was the enlargement of the calves. It was interesting to note that the left side was larger than the right.

NORTH BRANCH PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, held October 8, 1903.

The Chairman, H. Brooker Mills, M.D., in the Chair.

SYMPOSIUM ON SYPHILIS.

Recognition and Treatment of Acquired Syphilis.—This was the title of the paper read by Dr. S. Leon Gans, in which he called attention to the importance of always bearing in mind the essential pathological lesion—the round-cell infiltration. The chancre, he stated, was rather a building up than a breaking down process, and pus is not always present. They usually appear only singly and careful attention should be given to the mixed sore of Rollet, in order to avoid further skin complications. The condition of the epitrochlear and postcervical ganglia should be carefully noted, as should also the history of susceptibility to rheumatism, headache, follicular tonsillitis, cephalalgia, and all mouth and throat conditions; and all the superficial lymph glands should be carefully examined. He dealt at length with the various stages of the chancre and laid stress upon the importance of paying particular attention to extragenital lesions. The chancre is particularly difficult of location in women, being usually of the erosine type. From seven to ten days after the appearance of the initial lesions there is an enlargement of the ganglia accompanied by impaired hyperplasia of the lymph vessels, beginning near the sore and extending over the entire body; the secondary symptoms usually appearing about six weeks after the chancre, although they may be ninety days. He remarked that the early secondary symptoms are symmetrical all over the body, involving the superficial layers; the late secondary symptoms, while often symmetrical, are prone to localization and deeper; and the tertiary lesions are less widely distributed, invading more extensively the particular region attacked, usually unsymmetrical and more prolonged and indolent. The cases which are particularly apt to be overlooked are those in which the syphilides are manifested by only one or two erythematous spots, the subsequent eruptions being delayed for months, or probably never appearing.

Treatment.—Excision was not recommended. The sore should be kept clean, quiet and dry, and iodoform should be employed twice daily, after immersion of the organ in hot water for ten minutes. For the treatment of the secondary lesions, the stomach and skin were thought to be the preferable routes of administration, although in selected cases hypodermics and vapors might be used, believing that the proper course was to wait for the full development of the disease as signified by the early syphilides, in the interim correcting any gastro-intestinal or nervous conditions. Tobacco, whisky and champagne must be eliminated. Mercury is, of course, the important drug, and the method of administration would depend upon the stage of the disease and the individual patient, and in the later stages iodide of potassium is a valuable adjunct. The patient should be warned of his condition and the necessity for strictly following directions, and taking plenty of sleep and careful attention to hygiene. The mercurial treatment should be persisted in for eighteen months to two years, followed by six months' iodide treatment, then interval of six months without specific treatment, and then six months of mixed treatment.

Hereditary Syphilis.—This paper was read by Dr. Howard S. Kinne, in which he stated that the source of infection was either through infected semen from the father or an infected ovum of the mother, and remarked that the manifestations are usually worse in the first child, thus showing that the tendency to transmission is less as the time goes on. It differs from

acquired syphilis in that there is no chancre nor can the symptoms be classed under distinct periods. The chief differential point is the alteration which inherited syphilis impresses upon the nutrition and development, as is evidenced by the fatal marasmus, or acute inflammation of the epiphyses or chronic osteoperiostitis, producing deformity of the bones. The family history should be carefully considered, although the symptoms are varied, and usually appear about six weeks after birth, consisting of coryza, erythematous, or, in some instances, papular rash, soreness of the corners of the mouth, irritation of the laryngeal mucous membrane, and, unless the infection is very light, marked anemia and interference with the digestion and wasting of the body. Antisyphilitic treatment of the pregnant mother will reduce very materially the chances of the offspring being infected. The child should be carefully nourished, preferably breast-fed and proper hygienic measures should be observed. Mercury and iodides should not be given unless symptoms are indicated. He reported the case of a child seven years old, in which the mother was infected about three or four years previous to the birth of the child, during which time she had three miscarriages; was treated for eighteen months, and subsequently there were no marked symptoms. The patient was breast-fed, and with the exception of occasional coryza, was perfectly well until six years of age, when swelling appeared over the metacarpal bone of the right hand, and also over the biceps muscle of the right leg. The swelling on the hand was a fluctuating inflammatory mass, and on incision necrosed bone was found, which was curetted and the patient put on a treatment of $\frac{1}{24}$ gr. bichloride; and 5 grains of potassium iodide t.i.d., the latter being increased 10 grains a week, until he was taking 50 grains t.i.d., which has continued until the present time, the treatment beginning in March, 1903, since which time the symptoms have entirely disappeared and there has been no iodism.

Diagnosis and Treatment of Syphilis of the Central Nervous System.—This paper was read by Dr. Luther C. Peter, in which he considered only those conditions which were due to the direct action of the infection and not the symptoms due to organic changes following long after the disease has disappeared, in which he stated that variability in symptoms, absence of systematic grouping of symptoms, paralysis of cranial nerves, Argyll-Robertson pupils, irregularity of pupillary margin, inequality of pupils, apoplectiform and epileptiform attacks, recurring palsies, usually without loss of consciousness, numbness in extremities, increased reflexes, headache, vertigo and altered mental states are symptoms which point to syphilis of the brain and it coverings. He reported a case of a man, aged forty-three years, who had had a chancre some months previous to coming under observation, and for seven weeks previously had been ailing. A few weeks afterward, he complained of a feeling of "sudden stopping of the heart," as though it had ceased to beat, but did not lose consciousness. He also complained of weight in the right arm and cramping of the fingers when attempting to write. Two months later, when about to get up in the morning, he noticed black specks before his eyes and then lost consciousness; later he suffered from diplopia and paresis of the right side, with increased knee-jerks and marked depression of spirits. The doctor remarked that in syphilis of the cord there is a distinct set of symptoms, characterized by slowly oncoming spastic paraplegia, atrophic at times, contractures of the muscles, involvement of the bladder, slight disturbance of sensation, with a tendency to alternative improvement and relapse, the essential feature being involvement of the entire cord. He reported the case of a man, thirty-nine years of age, first developing several years after the appearance of the chancre, commencing with recurring numbness in the extremities, impairment of the bladder function, diplopia, headache, vertigo, difficulty in speech, at times, spastic palsy of the left leg, partial palsy of the left arm, Argyll-Robertson pupil, impairment of sensation to the touch. He died six years after coming under observation from pneumonia, and post-mortem examination revealed syphilis of the brain and cord and their coverings. The intermittent treatment with potassium iodide and mercury, the latter preferably by inunctions, was recommended, and it was felt that it should be persisted in for several years.

The Recognition and Treatment of Some of the Pharyngeal Lesions of Syphilis.—This was the article of Dr. Lewis S. Somers, Philadelphia, in which he considered (1) the erythema; (2) the mucous patch, and (3) the ulceration. Erythema he believed was frequently mistaken for catarrhal pharyngitis or tonsillitis, especially in private practice. An examination of the erythema, however, will reveal the fact that it presents a deeper brick-red or more of a copper hue, and a marked tendency to the development of small irregular patches of cloudy swelling, which, when they become larger, well-defined and present a whitish or bluish-white color, constitute the mucous patch, the most frequent site of which is on the soft palate, pillars and tonsils, being oval, circular or stratiform in shape. In ulceration, the parts are covered with a thick, mucopurulent, offensive secretion; there is marked tendency to osseous destruction, particularly when the palate is involved. Tuberculosis, lupus, carcinoma and diphtheria may all conflict with this disease, although the former three would usually manifest quite prominent symptoms in other parts of the body, and the latter can easily be recognized by the presence of the specific organism. Three important diagnostic aids are: History of the initial infection; evidences of the disease in other parts of the body, and the response to specific treatment, and, unless one of these is obtained, you cannot be perfectly sure in your diagnosis. He stated that he had obtained the best results in the erythema with protiodide of mercury in $\frac{1}{4}$ to $\frac{1}{3}$ grain doses two to three times daily; the disappearance of the congestion being accelerated in occasional cases by an astringent gargle. The same form of mercury, aided, in some cases, by the application of 20- to 50-per-cent. solution of nitrate of silver, locally, and in others by the local application of a solution of chromic acid, has given the best results. During the late tertiary stage this treatment will sometimes be of no benefit, and may even appear to aggravate the condition, in which case 3- to 5-grain doses of potassium iodide will usually produce marked relief. In the tertiary syphilitic ulceration the destructive process demands checking as quickly as possible, increasing doses of iodide of potash, beginning with 15 to 20 grains t.i.d., in conjunction with protiodide or bichloride of mercury, if necessary, to injection or inunction.

Syphilis of the Eye.—Dr. Wendell Reber read this paper, in which he referred to the impossibility of obtaining a record of just what percentage of syphilitics showed ocular symptoms, owing to the fact that such a history was difficult of elicitation, and in many cases the patient did not realize his condition. He considered the subject under the heads of the primary sore, the secondary or tertiary aspect and hereditary phase. The most usual site for the primary sore is at the margin or just without the margin of the lids, being due to the introduction of some of the poison into the eye. The secondary phase may affect either the cornea, the uveal tract, or the optic nerve and retina, being most fre-

quently in the uveal tract. The work of various authors shows an average of 50 per cent. of all cases of iritis as being specific, which he believed was sufficient ground for suspicioning every case of iritis until trauma, tuberculosis, microbic infection or the rheumatic diathesis has been shown to be causative. Choroiditis is quite as frequently of specific origin as iritis, and is a valuable adjunct to diagnosis. The most frequent tertiary involvements are the intra- and extra-ocular palsies, and these conditions in the absence of diabetes or trauma are usually of specific origin and the forerunners of locomotor ataxia or general paresis. This stage may also be manifested in the optic nerve, lacrimal sac, or iris, the latter being quite rare. Hereditary syphilis is usually manifested by interstitial keratitis, which is characterized by flat nose, bluish gray-white corneas, depressed cheek bones and imperfect teeth, deafness due to inflammation of the auditory canals being a frequent accompaniment.

Dr. F. Savary Pearce felt that the presence of diplopia should always be suggestive of specific disease, especially, when in conjunction with headache, which is usually worse at night, and increased reflexes. The reflexes are usually out of all proportion to the sebasticity, which is due to the fact that the tertiary symptoms encroach upon the nerves and irritate the motor cortex of the brain without destruction. In syphilis of the cord, early involvement of the bladder is an important symptom. In all cases showing suspicious symptoms, where syphilitic history is denied, careful physical examination should be resorted to, and the patient should be impressed with the importance of continuing under treatment for at least three years before he can feel cured.

Dr. Leedom Sharp reported a case of syphilis occurring in a woman, in which he stated that she and her husband were both absolutely ignorant of the fact that he had ever had syphilis. It was manifested first by swelling of the glands, followed later by secondary symptoms. He referred to another case of gumma of the brain, which had been treated by several physicians for stomach trouble, neurasthenia without effect, finally developing periplegia of the left face and left leg, after which she was put on a treatment of bichloride of mercury with good results.

Dr. A. Bernheimer referred to several cases coming under his observation in which there was no history of syphilis in any member of the family, all of which had been very malignant, and suggested the possibility of infection through the tertiary or secondary manifestations of another person. He referred to the case of a girl who had a sore on her lip, which was relieved by zinc ointment, and a few days later there was swelling of the glands and some irritation of the body, which, after the removal of the glands, was relieved by mercury and iodides. He preferred the blue ointment as the method of ministration.

Dr. Carle Lee Felt referred to cases in which three or four children had died from syphilis within a few years, although both parents positively denied the disease, and another child was referred to him suffering from deafness, which was not relieved by iodide inunctions, etc. The case improved on the four chlorides, and the speaker suggested the possibility of this being a case in which the disease had jumped a generation. He also referred to two other cases of deafness from affection of the Eustachian tube, which had been benefited by the use of potassium iodide. Another case in which there was sloughing of the nasopharynx, of a syphilitic appearance, denied syphilis, but after two weeks' treatment with potassium iodide the sloughing disappeared. In conclusion he urged the importance of thorough and long-continued treatment.

Dr. A. Bern Hirsh called attention to the importance of looking after the obscure symptoms of syphilis, and believed that the patient should be thoroughly warned of his condition, and when apparently cured, should be instructed to inform any physician who might in the future treat him for a return of such symptoms, that so many years ago he had had similar symptoms.

Dr. Peter, in closing, felt that as good results could be obtained from small doses of potassium iodide as from the other larger ones. Nervous syphilis, he believed, occurred within six months after the initial lesions, although there are exceptions, one of which had come under his notice in the case of a man suffering from hereditary syphilis, who was entirely free from symptoms from six to forty-five years of age, at which time he had severe meningitis and cerebral ataxia.

Dr. Lewis S. Somers, in closing, called particular attention to the necessity for impressing upon the mind of the patient the exceedingly infectious character of the disease, and referred to a case in which the disease had been contracted by drinking out of the same bucket, or using the same blowing tube at a glass factory. He emphasized the value of tonic treatment in addition to the specific remedies, and laid particular stress upon the importance of large doses in tertiary syphilis of the upper respiratory tract.

Dr. Reber, in closing, believed that diplopia was a very valuable symptom. While he felt that inunctions were important in hospital work he did not favor their employment in private practice.

CHICAGO SURGICAL SOCIETY.

Regular Meeting, held November 2, 1903.

The President, E. W. Andrews, M.D., in the Chair.

Tuberculosis of the Knee.—Dr. Wm. Hessert showed a young man who had been suffering since childhood with a tuberculous knee. Patient had been treated for years by different physicians without avail. He had all the classic symptoms of a typical tuberculous knee. A typical resection was performed. The result was excellent, with shortening of a little more than an inch.

Umbilical Hernia.—Dr. Hessert showed a patient upon whom he had operated for umbilical hernia. The woman had been suffering for nearly thirty years from this hernia. At first the hernia was small, but of late it had assumed enormous proportions and was irreducible. The patient submitted to operation and the author performed a typical Mayo operation. The woman recovered.

Appendicitis with Severe Complications.—The author's third case was one of appendicitis with the usual typical history. After opening the abdomen it was found that the appendix had ruptured, and the stone had escaped into the free peritoneal cavity not far from the appendix. The usual operation was performed. The complications were retrocecal abscess; circumscribed empyema on right side; abscess of right lung which broke into a bronchus, and a second circumscribed empyema on the right side anterior to the first cavity. The patient was treated for these complications.

Dr. A. J. Ochsner said that everyone who operated upon umbilical hernia up to six years ago, before the present method advised by Mayo, knew that there was danger to the patient from edema of the lungs or pneumonia. A large proportion of such cases had a recurrence. With the present Mayo treatment, neither of the conditions named occurred, and the operation was safe and resulted in a permanent cure. He had used the operation in over 30 cases, with excellent results.

Dr. Wm. E. Morgan said that the result in Dr. Hessert's first case had been largely governed by his careful observation and frequent examinations of the patient after primary drainage. The fact that there had been previously an empyema, and an abscess of the lung on the same side, and the further fact that another focus of empyema on the same side was found, showed great diagnostic ability.

Case of Interscapulo-thoracic Amputation for Sarcoma of the Scapula.—Dr. A. E. Halstead exhibited a patient upon whom he performed this operation. Dr. Halstead performed the Paul Berger operation, and mentioned its steps. He said the tumor had been examined microscopically and was found to be a mixed giant- and spindle-cell sarcoma. The patient suffered no shock from the operation, was up on the third day, and left the hospital at the end of ten days. The wound healed by primary intention.

Dr. Arthur Dean Bevan had done three of these operations. The first case in which he performed this operation was carefully gone over by himself and other physicians. The man presented himself with a tumor situated at the upper end of the humerus, and careful examination was made to determine if there was any primary focus anywhere else in the body. No such focus having been found, the conclusion was reached that it was a case of primary sarcoma of the humerus. An amputation was made on the strength of that diagnosis. Histological examination showed that it was a carcinoma. The patient died four or five months after the operation with symptoms of enlargement of the prostate, although he was only forty-five years of age. Examination showed primary carcinoma of the prostate, and that the bone tumor was secondary to it. He narrated the particulars of two other interesting cases, in one of which the tumor was a secondary carcinoma. He said surgeons must be careful not to do what he had done twice, namely, to amputate the entire upper extremity for secondary carcinoma. From his limited experience, many of the cases were secondary carcinomas, having a small primary focus elsewhere. He thought it wise to remove the entire clavicle, to guard against a possible recurrence.

Dr. A. J. Ochsner had done the operation twice, once in 1892, for sarcoma of the shoulder involving the entire joint. The patient remained well after eleven years. The other patient was operated on eight years ago for sarcoma of the shoulder and was also well at this time.

Dr. Halstead, in closing the discussion, said he had had occasion to look up the statistics of the operation at the time he operated on his patient, but did not find them as favorable as many were led to believe. He mentioned the statistics of Schultz, who took all of the cases operated on since 1875, and found an operative mortality of 7.14 per cent.; definitive recovery in 10.71 per cent. He said that his own case presented difficulty in diagnosis. The man had been anesthetized, and an effort made to reduce a supposed dislocation of the shoulder joint. This brought up the question of false aneurism or hematoma, which was excluded. A diagnosis was made by eliciting crepitation, which he said was characteristic of giant-cell sarcoma. Repeated examinations of the urine showed the presence of albumose, a common symptom of this particular form of sarcoma. This did not exclude osteomyelitis, but after introducing a needle into the tumor and nothing but fluid blood being withdrawn, osteomyclitis was excluded and this left nothing but sarcoma to be considered

The Pathology and Treatment of Recent Fractures of the Patella—Dr. S. C. Plummer, of Chicago, Ill., read this paper.

After considering the arguments for and against the operative treatment, he proposed the following as a fair statement of the present status of the question of treatment of recent simple transverse fracture of the patella: (1) Operative treatment should never be undertaken except under the best of conditions for maintaining asepsis. (2) Presupposing ideal aseptic conditions, not every case should be subjected to operation, but only those in healthy patients of suitable age, with at least half an inch of separation of the fragments and lateral tears which compromise the "reserve extension-apparatus," or in patients following arduous occupations. (3) The operative treatment fulfils all the indications for treatment in a manner which the non-operative method can only partially achieve, but good functional results follow the non-operative treatment as a rule. (4) Early massage in all cases favors the early and complete restoration of function of the joint, and should be used in all cases. (5) If operative treatment is employed, the open arthrotomy should be used. (6) Absorbable suture material applied to the soft parts is sufficient in nearly every case.

Dr. Daniel N. Eisendrath was glad to hear the conclusions of the essayist that surgeons should not employ the operative treatment for fracture of the patella unless the surroundings were favorable. As to the treatment by non-operative methods, if the pathology of fractures of the patella was borne in mind, and treatment directed accordingly, almost as good results could be obtained with the non-operative treatment as with the operative. The pathology consisted of extensive tears in the aponeurosis as well as of the bone itself, with a large amount of effusion into the joint. If a posterior splint was applied, even though there was not exact coaptation of the fragments, by having massage applied regularly every day, for the purpose of getting rid of the effusion, and also of preventing atrophy of the quadriceps, which delayed extension, good functional capacity could be effected after three or four months. He did not agree with the essayist in advising the beginning of passive motion at the end of the fourth week, and called attention to a case which he exhibited to the Society last winter, in which he sutured the patella, with accurate approximation, but did not begin passive motion until the end of the sixth week. As suture material he thought kangaroo tendon was ideal.

Dr. D. A. K. Steele thought most surgeons had reached the conclusion that in the simpler transverse fractures of the patella, with a minimum amount of violence, the non-operative treatment should be employed. However, in cases of fracture of the patella due to direct violence, in which the soft parts had been materially injured, or where there had been a stellate fracture of the patella, the open method of treatment gave by far the best results. True bony union could be better obtained by the use of sutures.

Dr. Wm. E. Morgan mentioned two cases which showed how surgeons were obliged sometimes to treat one fracture differently from that of another. He reserved operation as a secondary procedure in all fractures of the patella that were not compound. His results from conservative measures in ordinary fractures without operation had been just as good as from suturing. He would postpone suturing until he was convinced that useful union could not be obtained by the ordinary methods of dressings.

Dr. Thomas A. Davis narrated the case of a patient who had sustained three fractures of the patella from indirect violence. There was extensive interposition of the soft tissues between the fragments. The patient in alighting from a train sustained a transverse fracture of the patella. There was separation of one-third of

an inch; also considerable swelling of the joint. After a few days' rest, massage, and hot applications to the joint, an incision was made and the patella wired with silver wire after drilling holes through the fragments. Several months later the patient sustained a fracture of the other patella under precisely similar circumstances. He found a separation of from 2½ to 3 inches of the fragments which he had first wired, also separation of three-quarters of an inch of the recently fractured patella. He operated on the recently fractured patella first, and later on the other, wiring the fragments. The patient was now perfectly well and attended to his business.

Dr. Charles Adams said that suturing of the fractured patella depended upon the surroundings of the surgeon. If he were in a place where he could depend upon asepsis, he would be inclined to suture most of the cases. The cases he has sutured have done very well. The surgeon was bound to restrict operative intervention to those cases where the soft tissues were interposed between the fragments, or where it was impossible to secure good apposition without the aid of some ligature. For suturing he had found that kangaroo tendon answered the purpose admirably.

Dr. Plummer, in closing the discussion, said there was a wide variance of opinion among writers as to the time for beginning passive motion. Scudder had advised beginning passive motion at the end of the fourth week in non-operative cases, and at the end of the second week in operative cases.

Demonstration of McGraw Elastic Ligature.—Dr. A. J. Ochsner said that this ligature was applicable to gastro-enterostomy in which the pylorus was not completely obstructed either by carcinoma or cicatricial constriction. It was likewise applicable for making anastomosis between the intestines. The operation could be done as quickly by it as by the Murphy button. It took about the same length of time. He had used the McGraw elastic ligature in 40 cases, with three deaths.

Dr. D. A. K. Steele asked whether in any of the 40 cases referred to serious symptoms had occurred from acute intestinal obstruction where the elastic ligature was used.

He said the objection to the elastic ligature and to the Murphy button was that these devices worked while surgeons were asleep. Personally, he liked to see the work finished. In any mechanical device that was used, one had to depend upon the element of time; it took hours or days for the elastic ligature to perform its function, which was somewhat uncertain. The same was true of other mechanical contrivances. He agreed with Dr. Ochsner in saying that ultimately surgeons would have to come to the use of the needle and thread.

Dr. E. Wyllys Andrews said he began to use the McGraw elastic ligature soon after the publication of Dr. McGraw's original paper. He had employed it in a dozen cases, with one death. The elastic ligature, he thought, was a little quicker device than the Murphy button and had all its advantages. It had the additional advantage over the Murphy button, in that the surgeon did not have to open a hollow viscus which might infect the peritoneum.

Dr. Arthur Dean Bevan was interested in hearing Dr. Ochsner report forty cases, with practically no operative deaths. This meant a great deal, and yet, when one turned to the work that had already been accomplished with needle and thread, the results were excellent. For instance, he mentioned the admirable report of Munyon, of 76 gastro-enterostomies, with only one death, by means of needle and thread.

Dr. Ochsner, in closing, said that practically he had never done a gastro-enterostomy that was as satisfactory as it was by the use of the McGraw ligature, but he desired it to be understood that he did not consider it the final thing. He felt that if he could do the operation as well as Munyon had done it with needle and thread, he would not use the McGraw elastic ligature. As to the remarks of Dr. Steele, he said the case referred to was one in which Dr. Mayo had made a Mikulicz gastro-enterostomy with the elastic ligature, and later intestinal obstruction occurred from inclusion of more than ½ of the circumference of the intestine in the grasp of the elastic ligature.

BOOK REVIEWS.

A Text-book of the Practice of Medicine. By James M. Anders, M.D., Ph.D., LL.D., Professor of the Practice of Medicine and of Clinical Medicine, Medico-Chirurgical College, Philadelphia. Sixth edition, Thoroughly Revised. W. B. Saunders & Co., New York, Philadelphia and London.

The fact that 21,000 copies of Dr. Anders' Practice of Medicine have been sold in about four years is conclusive proof that the work is popular among the medical students and physicians of this country. There are many features that commend it. The arrangement is such as brings related subjects closely and logically together, and in such a way that the consultation of various parts is ready and easy. The portions devoted to treatment are especially full and practical, and methods of diagnosis are given with a clarity and attention to detail that make their application, even in the hands of the physician unaccustomed to some of the technical details described, facile of accomplishment.

Among the new subjects treated in the present edition are paratyphoid fever, the fourth disease in the measles-scarlet fever group, trypanosomiasis, orthostatic albuminuria, a better name than the cyclic albuminuria of the older text-books, transcortical aphasia, adiposis dolorosa (Dercum's disease), and amaurotic family idiocy. As the names of these will indicate, no attention is spared in successive editions, and no delay allowed to occur in the exposition of new subjects. The work is evidently from the hand of a practical teacher, who realizes what the difficulties of the medical student are (and what physician does not remain a medical student in our day?), and who is able to present very clearly just the material necessary to solve such difficulties.

A Text-book Upon the Pathogenic Bacteria. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia; Pathologist to the Philadelphia Hospital and to the Medico-Chirurgical Hospital, Philadelphia. W. B. Saunders & Co., New York, Philadelphia and London.

Dr. McFarland's Text-book upon the Pathogenic Bacteria is in its fourth edition, an index at once of the popularity of the work and of the general interest among physicians in this comparatively new subject. The present edition contains some noteworthy features and especially a full set of bibliographical references to original papers of value in bacteriology, and to the literature of recent advances in this progressive subject. Notwithstanding considerable additions, by the judicious use of smaller type, the number of pages has not been increased.

We have read with special pleasure the chapters on the biology of bacteria and on immunity. Nothing is clearer than that for the proper understanding of bacteriology and its applications to sanitary science, especially as regards the preservation from contamination of

food materials and drinking water, physicians will have to understand the principles of the biology, or life-habits of the bacteria. The chapter on immunity contains the best and clearest brief exposition of Ehrlich's theory and its relations to Metchnikoff's teachings with regard to immunity that we have as yet seen. This subject is of very living interest at the present moment, and owing to the long terms employed and the absolute novelty of some of the ideas exploited, has been a source of no little confusion to ordinary practitioners. Dr. McFarland's book in its constant progress, with repeated revision, seems destined to become one of the classical text-books on the subject of bacteriology.

A Text-book of Pathology. By Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. W. B. Saunders & Co., New York, Philadelphia and London.

Dr. Stengel's Text-book of Pathology, in its fourth edition, has been not only revised but considerably enlarged. The best proof of how great are the advances in modern pathology is to be found in a comparison of previous editions of this book with the present, in which, necessarily, a considerable portion of the work has had to be rewritten. There is a new chapter on the technic of pathological methods that will add greatly to the value of the book for medical students. The subject of immunity occupies a very important chapter, and is treated very fully and clearly, as becomes its present importance in medical literature.

The whole book bears evidence of being the work of a teacher of medicine, closely in relation with students and their actual difficulties. It has not been written from the distant standpoint of the lecturer, giving his information in his own way and without that careful attention to students' ways of understanding, which are often quite different from the viewpoint of the interested specialist. It is this practical teaching note in the book that has given it its popularity in the past, and will continue to prove its best-selling quality in the future.

Clean Milk. By S. D. Belcher, M.D., Research Worker in the Rockefeller Institute for Medical Research, Attached to the Research Laboratory of the Department of Health of the City of New York. With an Introduction by W. H. Park, M.D., Professor of Bacteriology and Hygiene in the University and Bellevue Hospital Medical College and Director of the Research Laboratory of the Department of Health. The Hardy Publishing Co., New York.

In his introduction, Dr. Park shows that the insistence on a proper nutritive value and the prohibition of the use of preservatives are not sufficient to insure a good milk supply, but that of more importance still is the freedom from bacterial contamination. Long before milk has become sour to the taste, it may contain enormous numbers of bacteria and has usually become unwholesome. The number of bacteria is, therefore, the best means of determining whether the milk is clean and fresh. As a part of the movement for the improvement of the New York City milk supply, the author, by means of a grant from the Rockefeller Institute for Medical Research, and under the supervision of Dr. Park, visited a number of the dairies and farms which contribute to the city's supply of milk. Taking into account then the methods daily put in practice by the best of our dairies, as subject to bacteriological testing, the writer endeavors to set forth practical measures for use on a large or small scale for the exclusion of bacteria from milk. Veterinary and agricultural questions are not considered, but every means by which the number of bacteria may be limited. This includes the situation and care of pasture, cow-yards, and barns, the cows, the milkers, the cans, the bottling, and the getting of the milk to the consumer. Numerous photographic pictures add to the value of the text, which constitutes an evening's pleasant and instructive reading.

Functional Diagnosis of Kidney Disease. with Special Reference to Renal Surgery, Clinical Experimental Investigations. By Dr. Leopold Casper (Privatdocent an der Universität), and Dr. Paul Friedrich Richter (Assistent der III. med. Klinik), in Berlin. Translated by Dr. Robert C. Bryan, Adjunct Professor Genito-Urinary Diseases, University Med. College, Richmond, Va., and Dr. Henry L. Sanford, Resident Surgeon Lakeside Hospital, Cleveland. P. Blakiston's Son & Co., Philadelphia.

This little book contains an excellent résumé of recent work on the kidneys, especially as regards newer methods of determining their sufficiency. Cryoscopy receives full and clear treatment, especially as regards its usefulness for surgery. Dr. Casper's name especially is a guarantee of the thoroughly scientific quality of the book and also of its practical character. Excellent hints for ureter cystoscopy are given and the book will doubtless prove extremely interesting and useful for those engaged in such work.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Psychotherapy. By Dr. Sheldon Leavitt. 8vo, 247 pages. Garner-Taylor Press. Chicago.

The Principles and Practice of Hydrotherapy. By Dr. Simon Baruch. Second edition. 8vo, 487 pages. Illustrated. Wm. Wood & Co., New York.

A Text-Book of Clinical Anatomy. By Dr. D. A. Eisendrath. 8vo, 515 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

A Text-Book of Pathology. By Dr. Alfred Stengel. Fourth edition. 8vo, 933 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

A Text-Book of the Practice of Medicine. By Dr. Jas. M. Anders. Sixth edition. 8vo, 1,300 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

The American Illustrated Medical Dictionary. By W. A. Newman Dorland. Third edition. 800 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Nervous and Mental Diseases. By Drs. Archibald Church and Frederick Peterson. Fourth edition. 8vo, 922 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

A Text-Book Upon the Pathogenic Bacteria. By Dr. Joseph McFarland. Fourth edition. 8vo, 629 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Clinical Examination of the Urine and Urinary Diagnosis. By Dr. J. Bergen Ogden. Second revised edition. 8vo, 418 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Functional Diagnosis of Kidney Disease. By Drs. L. Casper and P. F. Richter. Translated by Drs. R. C. Bryan and H. L. Landford. 12mo, 233 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

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ORIGINAL ARTICLES.

THE INFLUENCE OF PASTEUR ON MEDICAL SCIENCE.*

BY C. A. HERTER, M.D.,
OF NEW YORK.

TO ONE who treasures memories of student days spent in your pathological laboratory, when each member of a small and favored group worked under the personal guidance of the great teacher whose unselfish labors have done so much for science in this country, it is indeed an exceptional privilege to address those who represent the School of Medicine that has grown since then to be the model for many an older institution. Yet I am conscious that this very privilege entails a risk proportioned to the largeness of the opportunity of using unworthily the precious moments which fortune has bestowed on me. My choice of subject has not, I fear, lessened this hazard, for I have chosen to speak to you of one of the most significant men of the past century, whether we consider him as a person, as an investigator or as a public benefactor. I pray you, therefore, deal gently with the shortcomings of an undertaking so difficult and ambitious as that of estimating the influence of a great career on the advance of medical science.

Louis Pasteur first saw the light of day on December 27, 1822, in an humble dwelling in the little town of Dôle in the Franche Comté. His parents had small means and limited social opportunities, but through the exercise of forceful character and unusual fidelity to elevated ideals of life, managed to give him a fair elementary education. The father, earnest, industrious and intellectually ambitous, instilled into his son the desire to become a useful and respected member of society, shielded him by constant companionship from the vulgar temptations of youth and fired him with a love of country which a long and honorable career as a soldier of Napoleon had strongly fortified. The mother of young Pasteur was prevented by household cares from sharing closely the intellectual interests of her only son, but showed the depth of her affection by making many a little sacrifice to further his education. She was a spirited woman, possessed of lively imagination and quick intelligence, and it is reasonably clear that the unusual artistic preceptions of Pasteur mark the perpetuation of these maternal gifts. Although the school days of Pasteur appear to have given little indication of an exceptional future, the lad showed some qualities which distinguished his work in later life. In his daily tasks, at which he worked faithfully and deliberately, he showed the most scrupulous accuracy and truthfulness, attributes which are the more noteworthy for the reason that they belong to a temperament enriched with a strong vein of romanticism, which for a time found expression in a fervid devotion to poetic literature. Moreover, Pasteur showed while still in his teens a pronounced capacity for portraiture. During his three years of instruction at the Collège Royal of Besançon, which he entered at eighteen years of age, the young student was more absorbed in literature and art than in science, and impressed his colleagues as being surely destined for an artistic career. The courtesy of Mr. Philip B. Marcou, of Cambridge, has made it possible for me to examine closely two fine examples of Pasteur's work at the end of this Besançon period. Although these portraits disclose the manual hesitancy of the imperfectly trained craftsman, they bear an unmistakable air of distinction and are executed with a respect for detail which is highly remarkable. Anyone who sees these youthful works is likely to feel that eyes so sensitive to these minutest particulars of form, would be apt to see many things which others had failed to notice; and it is noteworthy that Emil Fischer, whose calm judgment is well known, has expressed his belief that Pasteur's crystallographic discoveries were facilitated by his artistic perceptions.

The years at Besançon were followed by a highly important course of study at the Ecole Normal of Paris, during which Pasteur formed the determination to devote himself to science. For the first time in his life, the gifted impressionable young man found himself under the influence of a creative scientific mind of the highest order, a mind which has left a large and permanent mark upon the history of chemistry and which could not fail powerfully to mold the plastic intelligence of Louis Pasteur. Jean Baptiste Dumas, who had already discovered the great principle of substitution, united to his genius as an investigator the charm of a finished and spirited delivery. His Sorbonne lectures fairly captivated the young student and gave definite and lasting direction to his study and fancy and, later, to his researches. Other teachers of a superior order contributed to lead Pasteur into the promising and fascinating paths of physics and chemistry. The attractive Balard, to whom bromine had first surrendered the secret of its existence, reinforced the chemical teachings of Dumas, and the admirable lectures of Delafosse aroused an enduring interest in the subtle beauty of crystalline forms. But it is to the strong intellect of Dumas that Pasteur owed his first grasp of the great principles of science and that enthusiasm for work, which made it possible to ignore the harsh and depressing material conditions that prevailed at the Ecole Normal.

*Address delivered at the opening of the Johns Hopkins Medical School, 1903.

The recognition by young Pasteur of the importance of correlation in the physical sciences is an impressive feature of his mind at this period of close association with great chemical investigators. Evidence of this recognition exists in a singularly fine letter, full of enthusiasm for science, which he wrote to his colleague, Jules Marcou, then entering on his distinguished career as a geologist.* "Before finishing your letter," says young Pasteur, "I had already regretted that your studies in chemistry were incapable of responding to what geology will often ask of them." . . . "I know very well that many distinguished geologists have no broad conception of chemistry, but I believe this to be a great pity and I think that geology has not often enough turned to chemistry." The chemist of twenty-three summers held a point of view which was destined very soon to aid him in a memorable research.

It was in the field of crystallography that Pasteur, led by an interest in the ingenious and delicate methods of the science, first showed his exceptional capacity to observe minutely things and processes and to correlate and interpret the results of his observations. He began by carefully repeating a series of crystal measurements on tartaric acid, racemic acid and their salts, shortly before published by Provostaye. During the study of the recrystallized salts of tartaric acid he observed one very important but unobtrusive thing which the distinguished physicist had overlooked—regular evidences of hemihedral facets. All the tartrates showed a weak kind of isomorphism which is apparently forced on them by the tartaric acid group, whatever other element may exist in the compound. Guided, as he tells us, first, by the observation of Biot that tartaric acid and its compound rotate the plane of polarization, secondly by a relationship between the crystalline form of quartz and the direction of rotation, and finally by Delafosse's conception that hemihedrism depends on definite crystallographic laws, Pasteur concluded that there is a relation between the hemihedrism of the tartrates and their optical activity. An unexpected discovery soon proved this to be true in a conclusive and beautiful manner. One day in the dark library of the Ecole Normal Pasteur's eyes lighted on a remarkable paragraph from the writings of the Berlin chemist and crystallographer, Mitscherlich, relative to two different saline combinations of tartaric acid, the tartrate and the paratartrate (or racemate) of sodium and ammonium. This note stated that these two types of double salts have the same chemical composition, the same crystal form with equal angles, the same specific gravity, the same double refraction, and that in consequence of this their optical axes form the same angles. Their water solutions have the same refraction. The dissolved tartaric acid salt rotates the plane of polarization and the racemic salt is indifferent, as had been found by Biot for the whole series of salts. "But," continues Mitscherlich, "the nature and the number of atoms, their arrangement and their distance from one another are the same in both bodies." The contradiction expressed here upset all Pasteur's physicochemical ideas and persisted for months in his mind like an interrogation point. But the day came when experience cleared up the mystery by demonstrating that there is really a difference between the tartrates and the racemates which Mitscherlich had not noticed. The former bore hemihedral facets on the right side and always rotated the plane of polarization to the right; the latter bore facets both on the right and on the left sides and did not rotate polarized light at all. Moreover it later appeared that this inactive racemic acid may be caused to crystallize in such a way that the crystal mass consists of equally numerous dextrorotary and levorotary crystals, the former possessing hemihedral facets on the right side, the latter hemihedral facets on the left side. Both kinds of crystals were isomorphous, but the isomorphism was that of two asymmetric crystals, of an object to its reflected image. The weighty and surprising discovery had been made that indifferent racemic acid crystallizes into equal quantities of ordinary dextrorotary tartaric acid and the newly observed levorotary tartaric acid.

This research on the tartrates, culminating in 1848 with the discovery of the nature of paratartaric or racemic acid, proved that Pasteur had already made himself master of the experimental method.

Three distinct practical results followed in the train of this research as a consequence of continued studies of the crystallographic problem. In the first place there came to light numerous fresh evidences of a relation between molecular constitution, crystalline form and the property of rotating the plane of polarization. It is true that Pasteur seriously entertained some ideas of a highly speculative nature regarding the operation of dissymmetry in nature, ideas which involved him in fruitless experiments; but on the other hand the tangible and positive results of his work must be recognized as forming the basis of the modern doctrine of the asymmetrical carbon atom which has so illuminated our ideas of the spatial arrangements of the atoms within the molecules of organic substance. Secondly, the research on the tartrates led Pasteur to the recognition of a series of optically inactive compounds, including inactive malic acid and inactive amylalcohol. Finally, the crystallographic researches were the bridge over which the far-seeing investigator passed on the way to lay the foundations of a new biological science, a science which has effected a veritable revolution in our conceptions of medical problems. Cagniard-Latour, Schwann and Kützing, by knowledge gained in their experiments on alcoholic fermentation held one pass to the great secret, but saw not the fields of discovery to which it might have led them. Pasteur made his way thither by a singularly trustworthy intu-

* Mr. Philip B. Marcou has permitted me to read a large number of unpublished letters written by Pasteur to his father. The letter above quoted is dated June 10, 1845, and is one of a very small number belonging to this period.

ition. Greatly impressed with the circumstance that optically active substances like the sugars, the tartrates, the malates, the citrates, the gums and the proteids seemed to be confined to the organic world and were not to be found outside the tissues of plants and animals, Pasteur made a simple yet decisive experiment. To some pure crystallized inactive ammonium paratartrate he added fermenting albuminous material. After a time the fluid was examined with the polariscope. It rotated strongly to the left. This levorotation was obviously due to the fact that the dextrorotary constituent of the paratartrate had been decomposed. An optically inactive fluid had been converted into an optically active fluid. According to Pasteur's theoretical views this striking change indicated the mediation of living matter. The activity of unorganized purely chemical ferments could not, in his judgment, explain the facts; microorganic life must be in some way concerned Fortunately the mind in which this conception was born was also capable of testing its correctness by the most rigid methods of investigation. Fortunately, too, the external conditions favored a studious excursion into the processes of fermentation, for Pasteur was called in 1854 to a Professorship at Lille in a region of distilleries which involved the training of young men to proficiency in industrial chemistry and made it essential to get new light upon the various kinds of fermentation.

At this period of Pasteur's career the prevalent doctrines of fermentation were singularly unsatisfactory and uncontrolled by searching experimentation. The versatile Spallanzani had nearly a century before taken the important step of showing that putrescible liquids can be permanently protected from the processes of fermentation and decomposition by boiling and exclusion of air. Then Gay-Lussac, inspired by the revolutionary but constructive work of Lavoisier made his clever attempt to show that the results of Spallanzani were due to the exclusion of the oxygen of the air from the decomposible materials, and the ingenious French cook Appert put this erroneous idea to important practical use in his widely employed method of canning perishable foods.

Thus in the early days of the nineteenth century people were content to think of alcoholic fermentation as purely a chemical process. The first great blow to this widely accepted doctrine came from Theodore Schwann's incisive studies of the yeast plant in its relation to alcoholic fermentation. Very clearly did Schwann show that oxygen does not suffice to initiate the fermentation of sugar and that the necessary condition is the presence of something which is destroyed by heat—a living organism. Unfortunately he failed to maintain aggressively the new doctrine of the dependence of fermentation on micro-organic life. The result was that the new vitalistic hypothesis failed to make any important advance in the face of the sharp criticism and ridicule of so active and influential a teacher as Justus Liebig, whose word was nearly everywhere received as final in matters chemical and physiological.

To Liebig and to many others it seemed a retrograde step to assume that a living organism like the yeast plant is the cause of alcoholic fermentation, for the most advanced scientific thinkers were eagerly striving to explain the phenomena of life by physical and chemical laws and the rôle of "vital force" was being successfully restricted almost from day to day. Liebig pointed effectively to the fact that sugar undergoes other kinds of fermentation than alcoholic, such as lactic and butyric, but that nothing like a yeast organism was to be seen in these allied types of decomposition. It seemed to him that these various kinds of decomposition had one feature in common, the presence of a small quantity of nitrogenous substance. This dead material operated as the real ferment, by communicating a kind of shock to the molecules of sugar or beef extract with which it came in contact, which resulted in the fragmentation of the molecule into smaller molecules, the essence of fermentation and putrefaction.

To Pasteur the position of Liebig was wholly unintelligible because it rested on prejudice much more than on experimental evidence. He resolved to investigate the subject of fermentations from the standpoint which he had reached by observing the fermentation of the paratartrates —that is to say with the preconceived idea that fermentation depends on the mediation of living organisms. The first notable paper in the long series which solved one of the most pressing questions in biology deals with lactic acid fermentation.* It might perhaps have been anticipated that Pasteur's first important utterance on the nature of fermentation would deal with the alcoholic form which has so great a commercial importance. He discovered, however, in lactic fermentation an admirable field on which to contest the ideas of Liebig and his followers, who were constantly pointing out that in lactic fermentation, so like the alcoholic form, there is nothing at all like a yeast ferment. This research ended, as is well known, in the discovery of a specific lactic acid organism or ferment, and in the cultivation of this and other organisms in an artificial medium free from albuminoids. Pasteur was not slow in forming the hypothesis that different types of fermentation are dependent on different types of micro-organisms and this idea of specificity, soon established in relation to the ordinary de-

*During the years 1858 and 1859 Pasteur did highly important work on alcoholic fermentation. His views as to the significance of molecular dissymmetry had already led him to regard the levorotary action of amylalcohol as an indication that this regular product of alcoholic fermentation is found by the mediation of living organisms. It was in fact his study of amylalcohol (1855) together with the experiment on inactive ammonium paratartrate that incited Pasteur to undertake researches on the method of fermentative processes. His superior chemical training under Dumas was used to great advantage in all the researches on fermentation. In the case of alcoholic fermentation Pasteur showed that the acid formed is neither acetic nor lactic acid but that succenic acid and glycerine are regular and not unimportant products. Lavoisier and Gay-Lussac represented the sugar in alcoholic fermentations as splitting wholly into alcohol and carbon dioxide, but the work of Pasteur showed that five or six per cent. of all the sugar is not decomposed in this way.

compositions, ultimately became the basis of our modern knowledge of the infectious diseases.

The research on lactic acid fermentation thus gave the *coup de grâce* to the chemical theory of fermentation at the same time that it marked the birth of the promising science of bacteriology. The development of a method designed to secure pure cultures from fluid media, the use of culture media of known composition and the careful chemical study of products of decomposition, all belong to this early period of Pasteur's life and were achievements of the deepest significance for the future of the great department of knowledge which has revivified the biological sciences.

Another research on fermentation deserves more than passing notice on account of the extraordinary discovery which appears as its almost acidental by-product. This is the investigation on butyric acid ferments (1861). This research brought to light the fact that there are motile organisms capable of inducing a decomposition of sugar with the production of butyric acid. In the course of this research Pasteur saw that these organisms (whose motility was most puzzling on account of its suggesting animal life) behaved very differently according to their position with reference to the cover glass, those at the center being active, while those at the periphery and exposed to the air were checked in their movements.* From this casual observation came the fundamental conception of anaerobic life. All physiologists recognize to-day "A class of beings possessing such vigorous respiratory power," as Pasteur aptly says, "that they are able to live without the influence of the air by taking oxygen from certain compounds, thus occasioning in the latter a slow and progressive decomposition."

That Pasteur's original and searching examination of the problem of fermentation would one day lead him into a controversy over the unsettled question of spontaneous generation might almost have been predicted. The long discussion with Pouchet and Bastian, containing something of bitterness and not a little of the ridiculous, is a dramatic and animated chapter in the life of a peaceable but truth-loving man. As students of the influence of Pasteur on medical science we need not pause to review this controversy, for its fruits are to be found in all his subsequent work on the specific nature of the infectious diseases. Yet this discussion, prolonged over nearly twenty years, and replete with instruction and entertainment, is worthy of a permanent place in the memories of scientific men.

After a public victory over Pouchet in 1862, which brought in its train the honor of election to the Academy of Sciences, Pasteur turned his attention toward two subjects of much practical interest which seemed closely connected with the phenomena of fermentation. One of these was the manufacture of vinegar, the other the diseases of wine. The study of vinegar led to the recognition of the micro-organic nature of the vinegar film or mycoderma and brought acetic fermentation into line with lactic and butyric fermentations. It led also to the discovery that the oxidation of alcohol through the agency of the vinegar organisms may be carried too far, acetic acid being lost by oxidation to water and carbon dioxide. Then again Pasteur was able to aid the makers of vinegar by teaching them that the indispensable film formation can be facilitated by the actual transfer of the living ferment to the surface of the vinegar. In the study of the diseases of wine Pasteur achieved even more helpful practical results, for after recognizing the dependence of sour, bitter and muddy wines on the presence of definite types of living ferments, he was able to suggest a simple and efficient way of controlling these disturbing agencies by the use of moderate heat. From this recommendation has sprung the use of the widely employed method of sterilizing which we call Pasteurization.

In Pasteur's growing interest in these works of practical utility we can detect a tendency which was destined to bear rich fruitage in medical science—the inclination to employ the gifts of which he could no longer fail to be conscious in a manner likely to be directly helpful in relieving the needs of his fellow men. It was this attitude which made it possible in 1865 to lead Pasteur not without regret away from his studies of fermentation, to a wholly new sphere of endeavor. In that year the mortality among the silkworms of northern France was so great that the silkworm industry was threatened with total extinction and grievous famine was making its appearance in a land where comfort and contentment had long reigned. Dumas, acting for a senate committee, selected Pasteur to solve the mystery of the plague. To Pasteur's remonstrance that he knew nothing of the subject and had never seen a silkworm, Dumas answered, "So much the better, you will not have any ideas except those that come to you through your own observations." There were many unfriendly comments on this appointment, for some scientific men could not understand why a chemist should be chosen to cope with an obscure zoological problem. But Dumas knew his man and confidently relied on the great gifts he saw in him. It was quickly evident that his faith was not misplaced. Only twenty days after his arrival at Alais, Pasteur prepared a note in which he outlined a method of breeding from the eggs of silkworms free from disease. Unlike his predecessors, he made the moth the center of the efforts to regenerate the race of silkworms. "If the butterfly is sick reject all its eggs." It required five years of Pasteur's most devoted attention, five years beset with uncertainties and disappointments, to establish this almost clairvoyant conception on an incontestable scientific bass. At the end of this period Pasteur and his highly skilled assistants had shown that there were two distinct diseases from which the silkworms died, pébrine or corpuscle disease, and flâcherie, a bacterial affection of intestinal origin. The former was

*Pasteur fell into the error of describing the butyric acid organisms as infusorians and thought he had shown that animal life can exist without oxygen.

proved to be a specific disease due to the psorosperm *Nosema bombycis;* the latter was believed by Pasteur to depend on a specific bacterium, but can probably be excited by several distinct varieties of bacteria. The pébrine disease, which was the chief scourge of the industry, was eradicated through the use of a careful system of breeding from eggs shown by microscopical examination, to be free from infection. The immense practical importance of this method sociologically as well as financially can be better left to the fancy than expressed in dollars and cents. But these immediate practical results do not adequately express the far-reaching effects of the great silkworm research which marks the entry of Pasteur into the realm of animal pathology, and is thus the vestibule of modern medicine. For it is true that the laws governing the propagation and development of the flâcherie disease have the most striking analogies to those of the diseases of man. The varying susceptibilities of different individuals to the same micro-organisms, the influence of the path of infection and the fact that flâcherie organisms acquire increased virulence after passage through the bodies of living silkworms foreshadow discoveries in human pathology. The two volumes dealing with the diseases of silkworms and dated 1870 are works whose contents should be familiar to every independent student of the infectious diseases.

The researches on the silkworm diseases had one practical effect of considerable importance for Pasteur's later career. The success with which Pasteur had solved his intricate and widely known problem made it natural that French investigators of animal pathology should in future turn to him as the man most likely to help them in their work, and this brought to him new opportunities for fresh successes.

It is likely that excessive work and mental stress in some degree contributed to the onset of the series of paralytic seizures which in October, 1868, threatened the life of Louis Pasteur. During the critical period of his illness many of the most distinguished scientific men of France vied with each other to share with Mme. Pasteur the privilege of nursing the man they loved so well, and of rescuing the life that had already placed science and a nation under enduring obligation, through discoveries which were either of the greatest practical utility or appeared susceptible of almost unlimited development. Had Pasteur died in 1868 he would have left a name immortal in the annals of science. Others would in some degree have developed his ideas. Already inspired by the researches of fermentation, Lister would have continued to develop those life-saving surgical methods which will forever be associated with his name. But we may well question whether investigations in biology and medicine would not have been, for a time at least, conducted along less fruitful paths. Who shall say how soon the great principle of experimental immunity to pathogenic bacteria, the central jewel in the diadem of Pasteur's achievements, would have been brought to light?

When Pasteur recovered sufficiently to resume work it was soon clear to apprehensive friends that he had no intention of leaving his ideas to be worked out by other men. The miseries of the Franco-Prussian war deeply affected him, and could not fail to inhibit his productiveness, but after a time the unquenchable love for experimental research was once more ascendant, and there began a new epoch, the epoch of great discoveries relating to the origin and cure or prevention of the infectious diseases of man and the domestic animal. As in the case of Ignatius Loyola, it seems as if the lamp of genius shone with a larger and more luminous flame after the onset of bodily infirmity, in defiance of the physical mechanism which is too often permitted to master the will.

The hostility of Pasteur to Germany and all things Teutonic was greatly intensified by the events of the Franco-Prussian war and has left a somewhat regrettable impression on his scientific work. Desiring to contribute to the rehabilitation of his unhappy country he was led to improve the processes of brewing, with a view to increasing the wealth of France and at the same time lessening the yearly tribute to the despised people beyond the Rhine. It was easily shown that some of the diseases of beer are due to the action of bacteria allowed to take part in the process of fermentation. But it soon became clear that the mere exclusion of these micro-organisms does not insure a brew of good beer. The problem was considerably complicated by the difficulty of deciding what constitutes excellence in beer and this situation was not helped by the fact that Pasteur who disliked the German drink almost as much as he disliked Germans, could not distinguish one brew from another. Nevertheless, after many discouragements he succeeded in establishing methods which much improved the character of French beers, methods involving the aeration of beerwort by sterilized air and the abandonment of open coolers. The results were far from satisfactory owing to the circumstance that Pasteur quite overlooked the part played by the undesirable forms of yeast—so-called wild yeasts—in the production of abnormal fermentations. In fact it is doubtful if he could have separated the different types of yeast by the methods at his command, for even in so late a work as the famous "Etudes sur la Bière," bearing the date 1876, we are struck with the inadequate character of Pasteur's devices for obtaining pure cultures of micro-organisms.

This work with its tender dedication to the memory of Pasteur's father, was a highly important contribution to bacteriology in spite of its many botanical defects. It is really a bacteriological potpourri bringing together the writer's views on many questions, rather than a strict treatise on the diseases of beer. Besides chapters on the causes of bad beer and our improved methods of brewing, the volume treats of the origin of fer-

ments and furnishes conclusive experimental evidence against that plastic doctrine of the transformation of species around which the friends of the spontaneous generation fallacy were hopefully rallying. But by far the most striking and original chapter in this notable volume is that in which Pasteur formulated his physiological theory of fermentation—the startling theory that the essential characteristic of fermentation is life without air, life without free oxygen. This theory, if not entirely upheld by other biologists, has at least proved a powerful stimulus to new studies of this unexplored aspect of life.

Pasteur's life was prolonged a quarter of a century after the close of the war with Germany and during a large part of this long period his mind dwelt almost unceasingly on two phases of the great biological and practical problem which it was his fortune to develope so fruitfully. One of these was the investigation of the etiology of disease as related to the activity of micro-organisms. The other was the experimental study of the amazing phenomena of immunity to the action of specific viruses or virulent micro-organisms. These two interdependent phases of bacteriological research culminated in one of the most remarkable discoveries of all time, remarkable for its practical results but even more striking as an example of the use of the imagination in science. It is well worth while to consider the chief events that ultimately led to the discovery of a method of immunization against the virus of hydrophobia.

The idea that some diseases are due to living micro-organisms was suggested by Boyle two hundred years before the days of bacteriology. From time to time thoughtful men took up this idea as worthy of discussion but it received no substantial confirmation until Schoenlein, with the aid of the microscope made his admirable discovery of the infectious nature of ringworm. This was in 1839. Within a few years Henle, the gifted anatomist of Göttingen, proposed an ingenious explanation of the infectious diseases which assumed the agency of micro-organisms, but the theory though based on thoughtful clinical considerations was deficient in experimental data and had little practical influence on medicine. It is scarcely surprising that the leading scientific minds of the epoch should have been hostile to any mere hypothesis of contagion by germs, for in their struggle against the ancient conception of a vital force they regarded the idea of a *contagium vivum* exactly as Liebig had regarded Schwann's and Pasteur's doctrine of fermentation. Even the illuminating cell doctrine of Virchow was not especially favorable to the idea that living organisms from outside can excite disease by fixing themselves and developing in the body. Pasteur's training and temperament and genius admirably fitted him not merely to detect the great central truth of etiology but to force it, in spite of stubborn opposition, upon a doubting world half stunned at the boldness of the new doctrine. But while he took by far the larger part in compelling this revolution in the conception of disease the way was prepared by others, and especially by the fine observations of the biologist Casimir Joseph Davaine and the accurate and ingenious experimental methods of Robert Koch.

Davaine, while assisting the clinician Rayer in the study of the devastating anthrax plague in 1850 observed little thread-like bodies in the blood of animals dead of this disease. Ten years later Delafond observed these little threads to be living organisms with the power of multiplying outside the body. Thirteen years after his first observations Davaine, incited by Pasteur's suggestive work on the butyric acid ferment, reopened his study of anthrax and confidently proclaimed that the organisms he had found were the cause and the only cause of anthrax. But it required the superior technic of Koch unquestionably to obtain the anthrax organisms in pure culture, to follow the cycle of their development in the animal body and thus to place the important discovery of Davaine on an impregnable scientific foundation. Pasteur, entering this field a little later, independently worked out some of the most striking features of the etiology of anthrax and convinced the best scientific minds of France of the relationship between the bacilli of Davaine and the perpetuation of the anthrax plague.

Very closely associated with Pasteur's work on anthrax is the admirable research in which the master, aided by Joubert and Chamberland, discovered the organism known to us as the bacillus of malignant edema but described by its detectors as the *Vibrio septique* in the same year (1877) in which the widely known publication on anthrax appeared. Of the many excellent features for which this research is distinguished there are two that deserve especial mention. First, the recognition of the *Vibrio septique* in the blood of animals not newly dead of anthrax was an extremely important service in clearing up the gravest objections to Davaine's doctrine of the etiology of anthrax. Secondly, the observation that the septic vibrio is anaerobic affords the earliest example of a pathogenic organism which in its vegetative form is inhibited by the presence of oxygen—a discovery which we may reasonably attribute to the experience gained sixteen years before with the butyric ferment.

In looking for fresh proofs of the bacterial origin of disease Pasteur made some visits to the hospitals of Paris and thus came into closer relations with the practitioners of medicine and surgery. The alert and intellectually honest minds bade him welcome and gave him every help to pursue his studies; the conservatives looked at him askance, confidently set up their time-worn theories against his experimental proofs and lost no occasion to ridicule the germ theory of the origin of disease. To-day it is difficult for us to picture the incredulity and amazement of many prosperous and self-satisfied practitioners on hearing Pasteur's announcement that he had found the same pus exciting micro-organisms (probably the *Staphylococcus pyogenes aureus*) in the pus from a series of boils and in the pus from osteo-

myelitis, and that these conditions, so different in clinical characters are identical as regards etiology. Very soon a second bomb of the same nature fell into the conservative camp with the confident and even fervid declaration that childbed fever is a septicemia commonly due to a coccus (streptococcus)* which could be detected in the cavity of the uterus, in the blood of the uterine sinuses, and in the blood of living patients. The far-reaching practical results of this investigation, to which Pasteur devoted only one short publication, are so well known to you that they call for no comment here.

Not long after the beginning of the anthrax study the attention of Pasteur was directed to a disease which was destined to play a remarkable part in leading to the great goal toward which the researches of the master were carrying him—the discovery that it is possible experimentally to induce immunity to disease caused by virulent micro-organisms. Perroncito, of Turin, and Toussaint, of Toulouse, had reached the conclusion that an organism detected by the former is the cause of chicken cholera, but neither had the requisite bacteriological training actually to establish the correctness of this contention. Pasteur was consulted on the subject, and, bringing to bear his superior knowledge and technical skill, succeeded in growing the organism outside the animal body and in experimentally inducing chicken cholera by means of these cultures grown *in vitro*. Returning to the laboratory after a short absence he found that his cultures of the bacilli of chicken cholera had failed to grow or had grown only feebly. To increase the activity of these micro-organisms they were now inoculated into normal fowls—a procedure suggested by previous experiments with other bacteria. The results were disappointing, for the inoculated animals showed no signs of the disease. This made it necessary to isolate and grow actively pathogenic bacteria from animals with chicken cholera. Having done this it occurred to Pasteur that it would be of interest to inoculate with fresh and virulent bacilli the animals already treated with the attenuated strain of chicken cholera organisms. This was done without delay, and, to his surprise, nearly all of these prepared animals resisted the virulent germs. They had been immunized by means of the attenuated cultures and a new principle had come into medicine. By experimental study and long reflection on the work of Jenner, the mind of Pasteur had been prepared to grasp the immense practical significance of this discovery. It appeared probable that what had been accomplished for chicken cholera could be extended to other diseases. One special consideration made Pasteur feel hopeful as to the possibility of immunizing sheep and cattle against anthrax. He had noticed that certain sheep long exposed to anthrax through grazing on infected pastures did not die after experimental inoculation with a virulent anthrax culture, whereas previously unexposed animals of the same herd died promptly after such inoculation. Moreover, he knew from experience that fowls can be immunized against chicken cholera by feeding them the specific germs of that disease and this fact strongly suggested a similar explanation for the anthrax immunity which he had noticed. With that analogy in mind Pasteur took the first step toward the preparation of a vaccine against anthrax. As in the case of chicken cholera, he strove to attenuate the specific organisms of the disease. This he tried to do in the way that had succeeded so well in the case of chicken cholera, this is by exposing anthrax cultures to an abundance of oxygen at the body temperatures. But Pasteur found that under these conditions the anthrax organisms retain their virulence, owing, he believed, to their capacity to produce resistant spores. To check this growth of the anthrax spores he successfully resorted to the procedure of growing his cultures at a temperature of 42° to 43° C. in the presence of oxygen. By varying the procedure somewhat he was able to prepare a series of anthrax vaccines of different degrees of activity, the use of a mild vaccine being followed by that of a stronger one in the course of immunization.

The announcement by Pasteur, Chamberland and Roux of a method of protecting animals against the anthrax scourge excited great public interest but was in many quarters received with skepticism and derision. Pasteur was invited to make a large scale public test of his claims near Melun at the farm of Pouilly le Port. He accepted the challenge gladly and on May 5, 1881, began a series of public inoculations which will always be memorable in the annals of medical science. The publicity with which the unique experiment was performed; the unconcealed hostility and suspicion of many of the onlookers, and the alternating hopes and fears of Pasteur, have been most entertainingly described by M. Vallery-Radot. The outcome was a convincing demonstration of the practicability of Pasteur's method of immunizing against anthrax in sheep. Nevertheless, two years later, in an ill-natured attack on Pasteur's work, Koch attributed the discovery of vaccination against anthrax to Toussaint and pointed to a paper in which the latter had reported some experiments describing the immunization of dogs and sheep by means of anthrax bacilli which had been heated at 55° C. for ten minutes.

While it is true that Toussaint thus immunized animals against virulent anthrax organisms, his method of obtaining a vaccine was unreliable and unsuited for practical use. The fact is that Toussaint, stimulated by Pasteur's discovery of a method for immunizing against chicken cholera, prepared a vaccine which sometimes protected against the disease but which was dangerous owing to uncertainty as to the number and condition of the living anthrax organisms which it contained. His publication appeared six months after

*Pasteur's description of the organism found in puerperal septicemia is not full enough to make it certain that he was dealing with pure cultures of the *Streptococcus pyogenes*.

that of Pasteur, who, although greatly interested in the observation of Toussaint, criticized the methods of the latter and ultimately prepared a safe vaccine consisting of definitely attenuated anthrax organisms. The crude experiments of Toussaint were wholly based on the epoch-making immunization to chicken cholera originated by Pasteur.

On March 15, 1882, Louis Thuillier, the earnest and gifted but ill-fated young assistant of Pasteur, discovered in the blood of swine dead of erysipelas (rouget de porc) an organism which appeared to be the active agent of this plague—an organism which Klein in his elaborate investigation had quite overlooked, but which was independently discovered by Detmers, of Chicago. Pasteur had inspired this fine research of Thuillier and stood ready to develop it. By carrying the suspected organism through many generations on veal bouillon and finally introducing it into hogs, the true swine erysipelas was readily induced. The real problem, however, was to make an attenuated virus for the purpose of immunizing against the disease. Pasteur succeeded in obtaining a virus capable of protecting certain races of hogs for a period of a year or more and this important practical success is rendered especially noteworthy by the method that was followed in attenuating the rouget organisms. In 1887 he had found in the saliva of rabid dogs an organism highly virulent for rabbits, (micrococcus of rabbit septicemia).* Adult guinea-pigs were immune but young guinea-pigs quickly died after inoculation. By passing the organism through a series of young guinea-pigs it gained in virulence until it grew fatal for adult guinea-pigs. But the modification which especially impressed Pasteur was that the bacteria which had thus gained in pathogenic qualities for guinea-pigs had at the same time become attenuated for rabbits.

The memory of this singular observation now came to his aid in the rouget research. After passing the rouget bacteria through a series of pigeons (which are naturally susceptible) it was found that the blood from the last pigeon had become much more pathogenic for swine than blood from hogs dead of swine erysipelas. On the other hand, Pasteur discovered that while the passage of the rouget organisms through a series of rabbits (which are not naturally susceptible) permitted these bacteria to grow more readily in the blood of rabbits and to become more highly pathogenic for them, they became definitely and permanently diminished in virulence for swine. Thus after inoculation with modified organisms hogs became ill but did not die. On their recovery they were immune to fatal rouget. The genius of Pasteur thus gave to biological science a definite method of permanently modifying the pathogenic characters of certain micro-organisms. This contribution is recorded in a paper which won the applause of the Academy of Medicine and which even to-day excites admiration for its mingling of experimental skill and scientific imagination.

So far back as 1880, in the midst of the exacting anthrax investigation, Pasteur had found time to begin a new research on the protective action of attenuated virus. From modest beginnings this research grew in the hands of the master to be the crowning work of his life, in the sense of embodying the fullest and in some respects most original expression of his ideas on the use of experimentally enfeebled viruses for the mitigation of infectious processes. The transmission of rabies through bites made probable the infectious nature of the disease and encouraged a hope that it would not be very difficult to isolate the specific organism from the saliva of rabid dogs. But the most systematic efforts to isolate such an agent were rewarded only by failure. To this disappointment was added a second, even more disconcerting. It was found that the experimental transmission of the disease by means of saliva is a matter of great uncertainty. Moreover the uniformly fatal outcome of hydrophobia made it impossible to form any opinion as to whether the unknown virus was capable of conferring immunity. Many an investigator would have been deterred from the prosecution of an enterprise so unpromising, but the interest of Pasteur had been fully enlisted before he realized the difficulties of the problem, and the tenacity of his nature urged him to keep patiently on his course. He saw clearly that a reliable way must be found to communicate rabies experimentally and acting on a suggestion made by Dr. Dubu, of Pau, that the disease is essentially one of the central nervous system, Pasteur took small bits of nervous tissue from animals dead of rabies and placed them under the skin of experimental animals. This method was no considerable improvement on similar inoculations of saliva from rabid dogs, but it served as the clew to a notable advance. This was the introduction of rabic nerve-tissue directly into the central nervous system of the animal to be infected, a procedure based on the idea that since rabies behave like a disease of the nervous system the micro-organisms causing it would be likely to find in the nervous system a living culture medium highly favorable to their growth. The acute intelligence of the masterful experimentalist is strikingly illustrated by the fact that failure to isolate specific micro-organisms had not shaken his faith in the trustworthiness of his preconceived idea. Hence when he found that hydrophobia regularly followed subdural inoculation with rabic nervous material he was more pleased than surprised. The first dog thus inoculated showed unmistakable signs of rabies after fourteen days and other animals gave similar results. Moreover, on bringing into practice the experience he had gained in studying swine erysipelas, Pasteur found that he could increase the pathogenic properties of the virus by carrying it subdurally through a series of rabbits or reduce it for dogs by carrying it subdurally through a series of monkeys. He thus had at his command three different viruses, a

*Micrococcus lanceolatus.

virus of natural strength, a virus of increased virulence and an attenuated virus. Later experiments showed that a safer virus could be prepared by drying over caustic potash at 21° C. spinal cords of rabbits dead of rabies.

By injecting subcutaneously first a weak virus and subsequently a stronger one into parts with very few nervous structures Pasteur succeeded in immunizing dogs against otherwise fatal subdural inoculations. This success suggested the possibility of immunizing human beings. The relatively long duration of the period of incubation, which is commonly about forty days, made the outlook for human immunization peculiarly promising. The opportunity for trying the method soon appeared in the person of the little Alsatian lad, Joseph Meister, who came to Paris with fourteen wounds inflicted by a rabid dog. Pasteur courageously resolved to make an effort to rescue the bitten child from the certain death to which he was doomed, by making successive injections of rabbit viruses of increasing strength. The result is known to all the world; the effort to utilize the long period of incubation to quickly establish immunity through repeated inoculations, proved a success, not only in the case of little Meister, but in many thousand other instances.

The great research on rabies fittingly marks the culmination of Pasteur's long career as an investigator. In that investigation can be seen the same technical skill, the same respect for minute detail and the same pertinacity that had distinguished so many earlier researches, but there can be seen also a degree of originality and a fertility of resource that excel nearly all previous exhibitions of these powers. The accumulated experience of a quarter century of original study of micro-organic life served as intellectual capital on which Pasteur drew for guidance at every turn in the extraordinarily intricate and perplexing study of rabies. And it seems wholly clear that this new discovery could never have been made without such a treasure of experimental experience.

One who looks only at the results of Pasteur's far-reaching work is apt to overlook his mistakes and shortcomings and to forget that he made some serious errors not only in the interpretation of experimental data but sometimes also in experimental technic. To pathologists of the present day Pasteur's conception of acquired immunity appears so crude that it is difficult to believe he ever entertained it seriously. His work on chicken cholera naturally led him to form a theory to account for the immunization which he observed and this theory was that immunity arises from the inability of a pathogenic organism to grow in a medium in which it has previously developed. Animals thus become immune because the necessary nutrient material for the multiplication of the specific organisms has been made up, just as an organism will after a time cease to grow *in vitro* in an old culture medium. It seems strange that he did not test this theory by trying to grow the organisms outside the body in the blood and serum of both the immunized and normal animals and so learn that he was in error. The short and usually inadequate descriptions of micro-organisms which Pasteur has given in his terse publication have aroused much criticism from bacteriologists and it cannot be denied that he underrated the importance of minute morphological and cultural studies, studies without which some of the most important modern advances could not have been made. Nor is it easy to explain the reluctance with which he adopted the improved bacteriological technic of other investigators. Koch's method of plating bacteria, Weigert's and Ehrlich's methods of staining and certain important nutrient media found their way into his laboratory only after long delay and through the efforts of assistants. Pasteur's comparatively faulty technic for obtaining pure cultures of bacteria is doubtless responsible for many of the disheartening results reported by foreign observers who used his vaccines. Nevertheless his methods in the main served their purpose well, and we should remember that the most finished instruments cannot belong to the pioneer who makes his own tools. Fortunately, Pasteur was greatly favored by the circumstance that in many of his etiological studies he made cultures from the blood, where the specific micro-organisms often existed in pure culture.

Although even the plainest narrative of Pasteur's individual achievements is proof enough that his work holds a unique position in the history of biological science it is worth while to consider in more general terms what it was that the consummate experimentalist added to the science of medicine. Such a consideration gives us a more just measure of his influence than the most detailed recital of specific investigations. If we would understand the influence of Pasteur on medical science we must recognize that his example as the apostle of an almost untried method of approaching the problems of medicine has been no less enlightened than his actual discoveries. Emerson has said, "Great men exist that there may be greater men." The recent history of medicine in the United States as well as in Europe plainly shows that the seed of example sown by Pasteur has already fallen on receptive soil from which have sprung new combinations of human faculties powerful for the amelioration of human life. Our country has no greater cause for satisfaction than the knowledge that the ideality as well as the methods of Pasteur have inspired a growing circle of original investigators in medical science who labor for the common welfare. Let us hope that this circle will be continually widened, in the future as in the past, by accessions from the students of this University, where the best ideals of work have been so richly nurtured.

Perhaps the most deeply significant feature of Pasteur's contributions to medicine is their direct dependence on the principles of physics and chemistry, the sciences that so often lie at the heart of real advances in biology. Medical men

trained along the conventional semi-scholastic lines had often dabbled with these fundamental sciences and sometimes the superficial contact had yielded creditable or even important results. In many instances also truly great advances had come from the labors of men who like Malpighi, Bichat and Johannes Müller were wide awake to the fact that sound medicine must rest on sound biological conceptions.

But despite the activity of numerous gifted medical men of broad scientific sympathies the medical profession at the beginning of Pasteur's career was dully following a well trodden but nearly blind road, in the hopeless struggle to solve the intricate problems of human pathology and physiology by minute observations and experiments confined largely to the most complex representatives of animal life. Then for the first time there appeared in the biological sciences a man profoundly trained in the methods of chemistry and physics and inspired, moreover, with a firm confidence in the applicability of these sciences to the solution of biological and medical problems. Triply armed with a sound method, a lofty imagination and a strong will to serve his country, Louis Pasteur entered the wide arena of medical research, to win there the triumphs that have reconstituted medicine and have secured him an undying fame. Step by step, with rigid logic and unfaltering determination, he passed from the early crystallographic discoveries to the new conception of fermentation and from this to the crucial discoveries relative to etiology and immunity for which the medical sciences had waited so long.

To have fought the long battle of life with unwavering constancy to the loftiest ideals of conduct, toiling incessantly without a thought of selfish gain; to have remained unspoiled by success and unembittered by opposition and adversity; to have won from nature some of her most precious and covert secrets, turning them to use for the mitigation of human suffering—these are proofs of rare qualities of heart and mind. Such full success in life did Louis Pasteur attain, and from the consciousness of good achieved, his noble nature found full reward for all his labor.

Of the children whom fortune has endowed with splendid gifts, there are few whose lives have affected so profoundly and so beneficently the fate of their fellows, few who have earned in equal degree the gratitude and reverence of all civilized men. Although not many can hope to enrich science with new principles, all of us may gain from Pasteur's life the inspiration to cultivate the best that is in us. Let us keep living in our memories the inspiriting words which the master spoke on the seventieth anniversary of his birthday: "Young men, young men; devote yourselves to those sure and powerful methods of which we as yet know only the first secrets. And, I say to all of you, whatever may be your careers, never permit yourselves to be overcome by degrading and unfruitful skepticism; neither permit the hours of sadness which come upon a nation to discourage you. Live in the serene peace of your laboratories and your libraries. First ask yourselves, what have I done for my education? Then, as you advance in life, what have I done for my country? So that some day that supreme happiness may come to you, the consciousness of having contributed in some manner to the progress and welfare of humanity. But, whether our efforts in life meet with success or failure let us be able to say when we near the great goal, 'I have done what I could.'"

REPORT UPON THE RESULTS WITH DIFFERENT KINDS OF PURE AND IMPURE MILK IN INFANT FEEDING IN TENEMENT HOUSES AND INSTITUTIONS OF NEW YORK CITY: A CLINICAL AND BACTERIOLOGICAL STUDY.*

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The work, of which the following is a report, is a part of an investigation into the production, transportation and feeding of cow's milk in New York City, which was undertaken in the summer of 1901, and which was extended over two years. The entire investigation contemplated an inquiry into the condition of farms such as were supplying milk to New York, the transportation of milk, its condition on delivery and its effect upon the children in tenement houses and institutions.

Observations upon the results of feeding cow's milk to healthy infants in tenement houses were determined upon, since in this way it was believed we could best study the problem under the conditions actually existing, and also avoid those influences met with in institutions which in themselves are so deleterious to infants. For comparison, however, a number of institutions were carefully studied during the summer of 1901.

The purpose of this investigation was to gather some facts upon the following points: (1) To make a comparison of the results of infant feeding in tenements in winter and summer; (2) to determine how far such results were affected by the character of the milk used, especially its original bacterial content, its preparation, and whether it was fed after heating or raw; (3) to see to what extent results were modified by other factors, such as the care the infants received and the surroundings in which they lived.

The clinical observations contained in this report were made by the following persons who were employed by the Rockefeller Institute: Drs. Eli Long, Mary E. Goodwin, Jane Berry, Alma Vedin, Mary Willets and Marie Grund. During the first season, J. S. Mabey was employed by the Institute, but during the second by Mr. Straus. There assisted in the work as volunteers, Drs. J.

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Sobel, Angenette Parry and Ford. Dr. Sobel reported for two seasons on a group of babies fed from the Good Samaritan Dispensary. To all of these workers the greatest credit is due for the thorough and conscientious way in which they did their work. They were most earnest and painstaking in obtaining as far as possible the facts desired, and much of the value of this report is due to their efforts. The bacteriological investigations were for the most part carried out in the Research Laboratory of the Health Department; but also, to a considerable extent, in the Carnegie Laboratory of the New York University. Drs. Letchworth Smith, Mary E. Goodwin, Katherine R. Collins and Rose A. Bebb carried out this portion of the work.

Observations were made during the summer of 1901, the winter of 1901-2, and the summer of 1902; during each of these seasons the different groups of infants were followed for an average period of about ten weeks. A considerable number were unavoidably lost sight of owing to removal with failure to leave address, and various other causes; but all others who could be kept under observation are included in the report. Excluding all imperfect records and those cases that were observed too short a time to admit of any deductions, there remain 632, of which 98 were observed during the summer of 1901; 211 in the winter of 1901-2; 278 in the summer of 1902, and 45 in the summer of 1903. This special group of 45 is included although the observations were made after the general investigation had closed.

The plan of investigation was that each of the workers should have a group of children, never more than 50, under personal observation. So far as possible the children were kept under the same general conditions as before. The weights were taken with great care by the physicians, at regular intervals in most cases. Nearly all of the infants were observed in their homes, to which regular visits were made twice a week for the entire period. One group of about 50 was observed by Dr. Sobel at the Good Samaritan Dispensary to which mothers came daily for the milk for their infants. When necessary one of his assistants went to their homes. In all cases advice was given in regard to matters of hygiene and the general care of the children. It was customary to stop the milk temporarily, whenever acute disturbances of digestion existed.

Bacteriological Investigation of the Milk Used in Feeding.—The clinical work was carried on in conjunction with a bacteriological study of the milk used, in order to determine whether any relationship existed between the number and character of the micro-organisms in milk, and the amount of diarrheal disease in the children to whom it was fed. Bacterial counts were made once or twice a week from the milk as given to each child. Specimens being taken at times from the raw and at times from the heated milk.

The bacteria were isolated from the milk through plating in a two-per-cent. lactose-litmus-nutrient-gelatin, or agar, and later grown upon the usual identification media. The pathogenic properties of the different bacteria were tested by intraperitoneal and subcutaneous inoculation in guinea pigs with 2 c.c. of a forty-eight-hour broth culture, and by feeding young kittens for several days with 3 to 6 c.c. daily of a twenty-four-hour broth culture by means of a medicine dropper.

With the characteristics of the bacteria thus determined, they were then separated into classes following as nearly as possible the lines suggested in Chester's Manual of Determinative Bacteriology. Further attempt was then made to identify as many as possible of the varieties with those previously described, using the descriptions of Chester and Migula. With a great many this proved unsatisfactory or impossible because of the incomplete descriptions in literature, or the lack of all description.

The varieties isolated represent only the species presenting greatest number in the milk examined, for in no case was more than 0.01 c.c. of a milk, and in most highly contaminated milks, only 0.001 c.c. used in making a plate, and varieties which occurred in too small numbers to be present in this quantity would necessarily be missed. For the purposes of this article it is not considered desirable to burden the reader with the enumeration of the varieties of bacteria found in the different samples of milk and their characteristics. Only a brief summary of the results will be given.

From the milks altogether 239 varieties of bacteria were isolated and studied. These 239 varieties, having some cultural or other differences, were divided into the 31 classes, each class containing from 1 to 39 more or less closely related organisms.

As to the sources of bacteria found in milk, we made sufficient experiments to satisfy us that they came chiefly from outside the udder and milk ducts.

Bacteria were isolated from various materials which under certain conditions might be sources of contamination for the milk, and the cultures compared with those taken from milk. Thus there were obtained from 20 specimens of hay and grass, 31 varieties of bacteria; from 15 specimens of feces, manure and intestinal contents, 28 varieties; from 10 specimens of feed, 17 varieties. Of these 76 varieties there were 26 which resembled closely those from milk, viz., 11 from grass or hay; 26 from manure; 5 from feed.

During the investigation a number of the varieties isolated from milk were shown to be identical with types commonly found in water.

From the few facts quoted above and from many other observations made during the course of the work, it would seem that the term "milk bacteria" assumes a condition which does not exist in fact. The expression would seem to indicate that a few varieties, especially those derived in some way from the cow, are commonly found in milk, which forms having entered the milk while still in the udder, or after its with-

drawal, are so well fitted to develop in milk that they overgrow all other varieties.

As a matter of fact, it was found that milk taken from a number of cows, in which almost no outside contamination had occurred, and plated immediately, contained, as a rule, very few bacteria, and these were streptococci, staphylococci and other varieties of bacteria not often found in milk sold in New York City; the temperature at which milk is kept being less suitable for them than for the bacteria which fall into the milk from dust, manure, etc. A number of specimens of fairly fresh market milk averaging 200,000 bacteria per c.c. were examined immediately, and again after twelve to twenty-four hours. In almost every test the three or four predominant varieties of the fresher milk remained as the predominant varieties after the period mentioned.

The above experiments seem to show that organisms which have gained a good percentage in the ordinary commercial milk at time of sale will be likely to hold the same relative place for as long a period as milk is ordinarily kept. After the bacteria pass the 10 or 20 million mark, a change occurs, since the increasing acidity inhibits the growth of some forms before it does that of others. Thus some varieties of the lactic acid bacteria can increase until the acidity is twice as great as that which inhibits the growth of streptococci. Before milk reaches the curdling point, the bacteria have usually reached over a billion to each c.c. For the most part specimens of milk from different localities showed a difference in the character of the bacteria present, in the same way that the bacteria from hay, feed, etc., varied. Even the intestinal contents of cows, the bacteriology of which might be expected to show common characteristics, contained beside the predominating colon types, other organisms which differed widely in different species and in different localities. Cleanliness in handling the milk and the temperature at which it had been kept were also found to have had a marked influence on the predominant varieties of bacteria present.

Pathogenic Properties of the Bacteria Isolated.—Intraperitoneal injection of 2 c.c. of broth or milk cultures of about 40 per cent. of the varieties tested, caused death. Cultures of most of the remainder produced no apparent deleterious effects even when injected in larger amounts. The filtrates of broth cultures of a number of varieties were tested, but only one was obtained in which poisonous products were abundantly present. Death in guinea pigs weighing, 300 grams followed within fifteen minutes after an injection of 2 c.c.; 1 c.c. had little effect.

As bacteria in milk are swallowed and not injected under the skin, it seemed wise to test the effect of feeding them to very young animals. We therefore fed forty-eight hour cultures of 139 varieties of bacteria to kittens of two to ten days of age, by means of a glass tube. The kittens received 5 to 10 c.c. daily for from three to seven days. Only one culture produced illness or death. A full report on the identification of the varieties of bacteria met with in this investigation can be found in an article by Dr. Smith in the 1902 Annual Report of the Department of Health.

After two years of effort to discover some relation between special varieties of bacteria found in city milk and the health of children, the conclusion has been reached that neither through animal tests nor the isolation from the milk of sick infants have we been able to establish such a relation. Pasteurized or "sterilized" milk is rarely kept in New York longer than thirty-six hours, so that varieties of bacteria which after long standing develop in such milk did not enter into our problem. The harmlessness of cultures given to healthy young kittens does not of course prove that they would be equally harmless in infants. Even if harmless in robust infants, they might be injurious when summer heat and previous disease had lowered the resistance and the digestive power of the subjects.

This failure to discover definite pathogenic bacteria, as well as the numerous varieties of bacteria met with, have forced us to rely on the clinical observation of infants to note what difference, if any, occurred in those fed on raw and Pasteurized milk from the same source, and upon different milks of unknown origin varying in the number of bacteria contained. In the following pages, observations upon food are combined with those upon other factors which influenced the health of the infants.

Selection of the Children for Observation.—The original aim was to include only infants who were entirely bottle-fed, but it was found that the great majority of all infants in the tenements receive during the first six months occasional breast feedings at night, and nearly all are given some solid food after they are six months old, or as soon as they are able to hold it in their hands. The purpose of the investigation being to obtain relative results with different forms of milk and not absolute results with one form, it is believed that the conclusions reached are not affected by the fact that many of the infants received breast feeding at night. Indeed including such infants has the advantage of studying representatives of a very large class. In each season some infants who were entirely breast-fed were observed for purposes of comparison.

In selecting the children the only conditions made were that they should not be ill or suffering from marasmus when observations were begun, and that they should be of suitable age. Of the entire number 340 were six months old or under, 265 were from seven to twelve months; 47 were a little over twelve months. With the exceptions stated, every child available was included by the physicians until the proper number was made up. The district in which most of the children lived was the lower east side of New York, as densely populated as any part of Manhattan Island.

An unexpected difficulty was encountered in beginning the investigation in the scarcity of bottle-fed infants in the region where the families were selected. One of the physicians reported

that in a densely populated neighborhood where every street was swarming with children, hardly half a dozen bottle-fed infants could be found on a block. While this may not have been true of the entire district, it was the observation of all the workers that the proportion of bottle-fed infants in tenement houses was surprisingly small. This is a very different impression from what one gains from visiting dispensaries where great numbers of bottle-fed infants are seen. But the dispensaries draw patients from very large districts and gather the cases that are not doing well, so that the aggregate seems very large. This excess in proportion of the bottle-fed infants at the dispensaries over that in the houses is in itself striking testimony to the advantages of breast feeding.

The Character of the Food Employed.—It was at first intended to make no change in the food the child was receiving, but it was found necessary in order that observations might also be made upon the comparative effects of heated and unheated milk in summer to place a number of infants upon a modified raw milk provided for them, which was a part of a larger supply distributed to others after Pasteurization. This was rendered all the more necessary since it was discovered that during the summer the sterilization of milk in some form was almost universally practiced in the tenements of New York. In the summer of 1902 especially, it was rare to find an infant fed upon raw milk; an incidental testimony to the value of the praiseworthy efforts of the Health Department, and the agitation in the public press in favor of clean milk and the necessity for sterilization in hot weather. When gastro-intestinal disturbance of any severity developed, the infants were deprived of milk for a day or two and put on barley water or other suitable food.

In the district where the observations were made the following forms of milk were extensively used: (1) Condensed milk; (2) milk purchased at small stores with groceries and other provisions and known as "store milk;" (3) bottled milk; (4) milk from central distributing stations, chiefly from the Straus milk depots and Good Samaritan Dispensary.

Condensed Milk.—That used was usually bought in cans, *i.e.*, the sweetened variety; seldom were the best brands purchased. It was generally prepared at each feeding by adding hot water which, in most cases, had been boiled.

Store Milk.—This is the poorest grade of milk sold in New York, but varies at the different stores. It is kept in large cans in the small stores and is sold to customers at an average price of four cents a quart. It averages about 3.75 per cent. of fat. It is customary for milk to be purchased twice a day and it is carried home and kept in pails or pitchers. In summer it is usually heated at once; if it curdles, it is considered to be unfit for use and is returned. During the hot days of the summer of 1901, it frequently happened that milk obtained from two or three consecutive stores would curdle. Heating is usually done in a saucepan and the temperature is raised to a point where the milk begins to "foam," seldom to a boiling point. In most cases it is kept upon ice. It is usually prepared for the infant at each time of feeding. The only modification practised is, in most cases, dilution with water or barley water, equal parts being as a rule given when infants are about three months old and continued until ten or eleven months when whole milk is given. The bacteriological examination made of this milk during the summer of 1901 showed it to contain from 4,000,000 to 200,000,000 microorganisms, an average of about 20,000,000 per c.c. The form of heating employed killed, it was found, about 95 to 99 per cent. of the bacteria present. In the summer of 1902, owing partly to the cooler season, but chiefly to the new regulations of the Health Department regarding the care and sale of milk, the average was about 3,000,000 per c.c. During the winter the number of bacteria ranged from 100,000 to 5,000,000 bacteria per c.c., and averaged about 400,000 per c.c.

Bottled Milk.—The greater part of the bottled milk used in these tenements was handled by one of the largest dealers in the city. This milk was produced under conditions which were only fairly good. However, it was so well handled during transportation and delivery that it was nearly always in good condition when received by the consumer. This milk averaged about 500,000 bacteria per c.c. It was sold in covered jars at eight cents a quart. The same general plan of modification was practised as with the store milk, and it was also in summer heated and usually in about the same way. As the people who purchased this were not so poor as those using store milk, they were more likely to use ice for keeping it.

Besides this bottled milk some special milk from the Walker-Gordon and Briarcliff Farms was furnished gratuitously to a limited number of cases for the sake of comparison but this was not widely enough used to admit of drawing conclusions sufficiently definite to be expressed in figures. This milk averaged about 10,000 bacteria per c.c.

Milk from Central Distributing Stations.—The greater part of this milk was supplied from the Straus Milk Depots of which there are a number scattered through the city, and from the diet kitchen of the Good Samaritan Dispensary, a small quantity from other diet kitchens. The milk used at these places was generally of excellent quality, usually from an "inspected" or "certified" farm, but it was mixed with poor cream. It was furnished gratis to those too poor to pay, and at a small charge, usually one cent a bottle, to others. This milk after the addition of cream averaged before Pasteurization nearly 2,000,000 bacteria per c.c.; after Pasteurization, about 500 per c.c.; after boiling, about 5 per c.c. It is supplied in small bottles, each one containing the quantity for a single feeding. The bottles are washed and sterilized at the central stations. The Straus milk

was generally Pasteurized; that from the Good Samaritan Dispensary was boiled. With both some attempt at modification was made, three or four standard formulas being used. The common modification consisted in the dilution with boiled water, the addition of lime water, milk sugar, and, in some cases, cream also; or the dilution with barley water and the addition of cane sugar. Regarding the use of these formulas, the quantity for one feeding, and the number of feedings daily, directions were usually given by the physicians in attendance at the Central Stations. As the mothers came daily for their milk, some constant supervision of the cases was thus possible, and many minor disturbances of digestion no doubt controlled by a proper variation in the food.

Infant Foods.—It was a surprise that the proprietary foods were so little used in the tenements, the expense being apparently the chief reason. Although they were given to a number of children observed, they were seldom used for a long time, or as the sole diet, and certainly cut no figure in the results. We have therefore not classified these cases separately.

Breast Feeding.—As already stated, the great majority of infants reared in tenements are breast-fed, at least for the first six months. No effort was made to collect many observations upon these children, but a few were introduced for the sake of comparison. It was thought at first to make a separate division of the children who were partly breast-fed, as it was the impression of some of the physicians who followed the cases that a decided difference existed between those who were partly nursed, usually at night, and those entirely fed. However, the general figures when tabulated did not show any very marked difference. The results seem to have depended rather upon the character of the other food.

In estimating the results obtained by the different methods of feeding two things were considered: first, the gain or loss in weight, and secondly, the amount of digestive disturbance, particularly diarrhea, which occurred in the different groups of infants. The cases have been divided according to results in four groups: (1) Those which did well. In this group are included the infants who made a substantial and generally a regular gain in weight during the period of observation, this usually amounting to from two to five pounds for the ten or twelve weeks, and those that had no diarrhea worth mentioning—usually both conditions existed together. (2) Those which did fairly, including those in which some diarrheal disturbance was present but not of a serious nor prolonged character, and in which the weight was either stationary or the gain very slight. Both these generally went together. (3) Those which did badly, including those in which considerable digestive disturbance, usually diarrhea, was present, or in which there was a loss in weight; generally here also both factors existed. (4) The fatal cases.

The following tables show in a condensed form the results obtained with the different foods employed in winter and in summer.

TABLE I. FOOD AND RESULTS.—WINTER.

	Did well.	Did fairly.	Did badly.	Died.	Totals
Store milk	47	6	2	0	55
Condensed milk	39	5	2	2	48
Good bottled milk	51	13	1	3	68
Milk from Central Distributing Stations	35	20	4	0	59
Best bottled milk	5	0	1	0	6
Breast feeding	7	1	0	1	9
Totals, excluding cases counted twice	156	41	8	6	211

TABLE II. FOOD AND RESULTS.—SUMMER.

	Did well.	Did fairly.	Did Badly.	Died.	Totals
Store milk	21	23	20	15	79
Condensed milk	22	20	14	14	70
Good bottled milk	37	23	29	9	98
Milk from Central Distributing Stations	84	33	24	4	145
Best bottled milk	9	3	0	0	12
Breast feeding	17	7	7	0	31
Totals, excluding cases counted twice	184	108	88	41	421

Season and Results.—Nothing could be more striking than the contrast between the results in winter and in summer. The general summary shows that of the 211 winter cases, 156 did well; 41 did fairly, 8 did badly and 6 died. In other words, what might be considered good results were shown in 93 per cent. of the cases, and bad results in only 7 per cent. Furthermore, in only one of the six deaths was the cause connected with the digestive tract.

Of the 421 summer cases, 184 did well, 108 did fairly, 88 did badly and 41 died. In other words, good results were obtained in 69 per cent. of the cases and bad results in 31 per cent. while in nearly all of the fatal cases death was due to diarrheal diseases. It should be remembered that all the children both winter and summer had the advantage of some continuous intelligent oversight, usually one visit a week and often two being made by the physicians. This supervision contributed in no small degree to the results in both groups of cases.

The difference in results in the summers of 1901 and 1902 was not great; the percentage of bad results in 1901 being 37; in 1902, 35 . This may have been due to the slightly cooler season of 1902, or the better general quality of the city's milk. The proportion of children on the different varieties of milk varied somewhat in the two years, so that a strict comparison is difficult.

The showing made by the winter cases is most gratifying and was indeed a surprise to all. So large a percentage of good results by all methods of feeding, and apparently so little difference between them was not expected. Artificial feeding in the tenements in winter would seem to be comparatively a simple problem.

To what shall be ascribed the great difference between summer and winter results? There seem to be many factors, but a consideration of the facts accumulated indicate that heat is the primary factor and bacteria and their products a secondary

one, except when the contamination is extreme or pathogenic organisms are present.

The effect of continued heat upon the health of infants is shown in the number of cases of diarrheal diseases and the number of deaths during ing the months of the summer of 1901 in an institution in the country near New York City, where a fairly pure milk was fed raw. During the winter and spring there was almost no diarrhea; with the warm weather of June it increased, reaching its highest point in August. The comparative results with the breast and bottle-fed infants are also evident.

Month.	No. of Infants.	Food.	Deaths.
June	34	Breast milk	0
	25	Cows' milk	0
	38	Breast and cows' milk	0
	128*	Milk and barley food	0
	Total..225		
	Number of cases of diarrhea, 15; deaths, 0.		
July	32	Breast milk	0
	20	Cows' milk	3
	38	Breast and cows' milk	0
	124*	Milk and barley food	0
	Total..214		
	Cases of diarrhea, 38; total deaths, 3 (all bottle-fed).		
August	28	Breast milk	0
	18	Cows' milk	3
	32	Breast and cows' milk	4
	129*	Milk and barley food	2
	Total..207		
	Cases of diarrhea, 50; total deaths, 9.		

Food and Results.—(1) Store Milk.—The largest number of bad results were seen, as was expected, with the cheap store milk, where not only was the milk poorer, but the care at home less. The winter observations upon this milk included 55 cases in about half of which some method of partial sterilization was employed; in the remainder it was given raw. Of these 55 infants, 47 did well; 6 did fairly; only 2 did badly and none died. Combining those who did well and those who did fairly, we have what may be considered good results in 96 per cent. of the cases and bad results in only 4 per cent. There was little apparent difference in results between those taking raw and those taking heated milk.

Store milk was the food of 79 of the summer cases. Of these 21 did well; 23 did fairly; 20 did badly and 15 died; in other words, good results in 56 per cent. of the cases, and bad results in 44 per cent. In nearly all of these cases the milk was heated in some way before feeding; usually it was raised nearly to the boiling point. This had the effect, it was found, of killing about 99 per cent. of the micro-organisms present, but the milk still contained after such heating between 5,000 and 500,000 bacteria to the c.c. An interesting point of tolerance of such milk was noticed in many cases. A number of infants living in bad surroundings, yet who received fairly good care, took only cheap store milk and yet remained well throughout the entire summer. During 1901 some of the store milk was very bad, averaging on hot days over 100,000,000 bacteria per c.c.

(2) Condensed Milk.—There were 48 winter observations upon infants taking condensed milk; 39 children did well, 5 did fairly, 2 badly, and 2 died, *i.e.*, good results were seen in 92 per cent. and bad results in 8 per cent. of the cases.

There were 70 summer observations made upon infants taking condensed milk. Only 22 of these children did well, 20 did fairly, 14 badly, and 14 died; or 60 per cent. good results and 40 per cent. bad results.

The results with condensed milk can hardly be attributed to the bacteria, inasmuch as it was almost invariably prepared with boiled water and contained relatively a small number of micro-organisms before heating. These children were often apparently in good condition until attacked with acute disease, when they offered but little resistance and seemed to succumb more quickly than any other class of patients. In one family three healthy infants, triplets, five months old, were taken sick on the same day with vomiting and diarrhea; one died within twenty-four hours, one within two days, and the third within a week. A bacteriological examination of the prepared milk remaining in one bottle showed nothing noteworthy.

(3) Bottled Milk.—The better results observed with bottled milk should not be put down as entirely due to the character of the food. The people who purchased it were seldom so poor as those buying store milk; they were usually more intelligent and probably more careful in handling the milk. Often they had ice.

There were 68 winter observations on children fed upon bottled milk; of these 51 did well, 13 fairly, only 1 did badly, and 3 died. None of these deaths were due to intestinal disease. In other words, there were good results in 94 per cent. of the cases, and bad results in 6 per cent.

There were 98 summer observations upon infants fed on bottled milk; of these 37 did well, 23 fairly, 29 did badly, and 9 died. In other words, 61 per cent. of good results and 39 per cent. bad results. In these quite a number received the milk raw, but as in the other observations, as soon as any illness occurred, some form of attempt at sterilization was almost invariably practised.

It is interesting to compare these results with those seen with store milk just above them in the table. The percentage mortality with the better grade of milk is only about one-half that seen with either condensed or store milk, and yet the large number of infants who did badly brings the proportion of bad results with bottled milk almost up to that with the two preceding varieties. It was noteworthy, however, that among infants included as doing badly there was on the average less sickness than among those fed on store milk. It would seem therefore that good bottled milk as now used, while much less dangerous to life than cheap store milk, is still, judging by this proportion of failures, rather unsuccessful as a method of feeding.

(4) Milk from Central Distributing Stations.—There were 59 winter observations upon these

* Those on milk and barley food were all over twelve months old.

patients, of which 35 did well, 20 fairly, 4 did badly and none died. In other words, good results in 93 per cent. of cases and bad results in 7 per cent.

There were 145 summer observations upon infants fed in this way; of these 84 did well, 33 did fairly, 24 did badly, and 4 died. In other words, 81 per cent. of good results, and 19 per cent. bad results. In about one-half of these cases the milk was Pasteurized; in the remainder, with the exception of a group of 42 cases to be mentioned later, in which the milk was given raw, the milk was sterilized.

The great difference between these results and those obtained with the three forms of feeding already considered deserves special attention. The original milk used at the stations was of good quality, but not much better than the bottled milk generally used; with both some form of sterilization was practised. The difference in results is not explained by the difference in these two factors. There were others of importance which must be sought. A certain amount of constant supervision was exercised over these infants, as some one, usually the mother, came daily to the milk dispensary for the food. Changes could thus be readily made in the milk according to the child's condition. If symptoms of slight indigestion were present, the mother was instructed to dilute the milk; with more severe symptoms, milk was temporarily stopped, etc. This supervision seems to us of the greatest value and can hardly be secured so well in any other way. Again, a mother sufficiently interested in her baby to come or send daily several blocks for the milk is generally one who values what she receives and also the advice which goes with it. This food, obtained in separate bottles for each feeding, is generally regarded by the tenement population as not exactly milk but as something very special, and therefore entitled to much more consideration than any form of food which they could prepare themselves at home.

Another point of importance is that some systematic attempt at milk modification was made in the milk furnished from central stations. Although this could not be done as accurately as for a smaller number of patients, the results were certainly improved by it. Again what contributed, in no small degree to success with this plan of feeding, was that this milk was supplied in separate bottles for each feeding, that the quantity for one feeding was suitable for the child, and that only a proper number of feedings for the twenty-four hours was dispensed at one time. There was not, therefore, the temptation to overfeeding and too frequent feeding, which with other methods are so generally practised. Finally, the bottles in which it was kept were always properly cleansed, and sterilized, since this was attended to at the central station.

(5) Best Bottled Milk.—This was furnished to 18 infants living in the tenements, to discover whether any perceptible difference existed between the results with this milk and the other varieties. While these observations are not numerous enough to admit of any generalizations, they indicate what was previously believed, that, with the cleanest milk from the best cared for cattle, the smallest number of bad results occurred.

There were 12 infants placed upon this milk in summer; of these 9 did well, 3 fairly, there were none who did badly and no deaths. There were 6 infants upon this milk in winter, of whom 5 did well and 1 did badly.

The difference between very bad, highly contaminated milk, like that purchased at some of the small stores previous to 1902 and the best bottled milk, was in some cases very striking. Protracted diarrhea in infants who were taking store milk was often immediately improved and in several cases promptly cured by simply substituting clean milk, after an interval of no milk, for the previous food. In some severe cases, however, no improvement followed the purer milk.

Age and Results.—In 17 cases the ages were not recorded. Of the summer cases 217 were infants under six months; 191 were between six and twelve months, and 47 were over twelve months. The comparative results for the different ages are shown in the following table.

TABLE III. AGE AND RESULTS—SUMMER.

Age.	Did well. Per cent.	Did fairly. Per cent.	Did badly. Per cent.	Died. Per cent.
Under 6 months.....	52	16	19	13
7 to 12 months.....	34	32	26	8
Over 12 months.....	49	32	19	0

Of the winter cases 123 were infants under six months, and 74 from seven to twelve months; none was over twelve months.

TABLE IV. AGE AND RESULTS—WINTER.

Age.	Did well. Per cent.	Did fairly. Per cent.	Did badly. Per cent.	Died. Per cent.
Under 6 months.....	74	21	0	5
7 to 12 months.....	70	20	10	0
Over 12 months.....	..	..	..	..

These figures indicate a considerably higher mortality in infants under six months, but a surprisingly large proportion of infants over this age who did badly. In summer, other factors than the milk used must be taken into account, one of the most important being the unwise giving of table food to infants over six months old, a practice which is almost universal in the tenement population. Giving fruits even to infants is also an important cause of illness. This was strikingly seen among the Italians. In this class of the population it was the opinion of some of the physicians who observed these cases, that the use of fruit, often unripe, stale or partly decayed, was the cause of more illness in infants and young children than the impure milk.

A separate study has been made of these cases which did badly, and the fatal cases, to determine any other factors beside the food and age which contributed to the results. An attempt was made to discover what sort of care these infants received, what their surroundings were, and whether the results in feeding were due to con-

ditions or diseases entirely outside the digestive tract.

Cases Doing Badly.—There were 96 infants who did badly, *i.e.*, they lost weight during the period of observation and had more or less disease of the digestive tract. Eighty-eight of these were summer cases and 8 were winter cases. The previous condition of this group of infants does not throw any special light upon results. This is noted in 86 of the 96 cases. In 52 the previous condition was put down as "good," and in 30 as "not good." It should be remembered that no infants previously in bad condition were included in the observations. The proportion of "good" and "not good" is about the same as in the children taken as a whole.

Care.—In the 88 summer cases this was not stated in 14; 30 were reported as receiving good care, 20 as having fair care, while 24 were positively neglected. The importance of the care the children received, as affecting the results of infant feeding, cannot be expressed in figures. What is included here as neglect was often of the grossest kind. As for example, where a mother was away all day at work and the infant left in charge of some old man, or irresponsible child, and where the visitor found bottles dirty, nipples rolling about the floor, sour milk in the feeding bottles, etc. It was practically the unanimous opinion of the physicians who made the observations that intelligent care had more to do with the results of feeding than any other factor. Many individual instances were reported of infants living under the worst surroundings and whose food was a very inferior kind of milk, and yet if the mother was intelligent and the infant well cared for, it throve in spite of the unfavorable conditions. On the other hand if the infant had no proper care it made little difference how good the milk furnished might be, the results were usually bad. One case will serve as an illustration. An Italian child two months old who had an intelligent, careful mother, did well for the entire summer on store milk. The following winter the mother was ill for a long time, during which time the child ran down steadily in spite of the fact that it was older and the weather was cold.

Surroundings.—While surroundings had a distinct influence upon the results in feeding, they were decidedly of less importance than the care. Since all these infants lived in tenements none could be said to have good surroundings. They were fair in 40 of the summer cases; distinctly bad in 33; in 15 they were not noted. Of the 8 winter cases, 7 had fairly good surroundings. By bad surroundings are meant very crowded apartments, rear tenements or basements. Many infants living in such places were rarely taken into the open air. Where the mothers availed themselves of the opportunities offered for day excursions upon the water and such fresh air as even the crowded city afforded, a distinct improvement was seen in the condition of the children.

Diarrheal Diseases and Other Forms of Acute Illness.—The number of days of diarrhea indicates pretty well the nature of the symptoms from which these infants chiefly suffered. Of the 88 cases which did badly, only 3 had no diarrhea; 19 had diarrhea lasting from one to seven days; 19, diarrhea from eight to fourteen days; 47, diarrhea of more than two weeks' duration. Other complications were present in 11 cases: bronchitis in 5; pertussis in 2; otitis in 1, and pneumonia in 3 cases. Of the 8 winter cases which did badly, none had diarrhea, but three had other complications, viz., one had measles, one bronchitis, and one pertussis.

Fatal Cases.—Of the 632 children observed, 47 or 7.5 per cent. died during the three months of observation. The mortality of the 211 winter cases was 2.8 per cent.; of the 421 summer cases, 11.3 per cent. Of infants under one year, neither in the age nor the previous conditions do we find any sufficient explanation of the fatal result. In the 47 observed who were over one year, no deaths occurred. The care which the fatal cases received is significant. Only 16 of the 47 infants who died received good care, and 19 were recorded as positively neglected. In 21 of the cases the surroundings were bad. The causes of death in the fatal cases were as follows:

Disease.	Summer.	Winter.
Diarrheal diseases	32	1
Pneumonia	5	2
Tuberculosis	2	0
Rickets	1	0
Diphtheria	1	0
Marasmus	0	1
Accident	0	1
Unknown	0	1
	41	6

The winter case having diarrhea was fed upon good bottled milk sterilized, and had gastric as well as intestinal symptoms. The marasmus case was a child fed upon condensed milk. In only two of the winter deaths could the result be definitely connected with the feeding; while in summer this was true of 30 of the cases.

Heated Milk vs. Raw Milk for Infants.—During each of the summers of 1902 and 1903, a special lot of milk was modified at one of the Straus depots for a group of 50 infants, all of whom were under nine months of age, and distributed daily in the usual way. To one-half the infants the milk was given raw; to the other half, Pasteurized.

The modified milk was made from a fairly pure milk mixed with ordinary cream. The bacteria contained in the milk numbered on the average 45,000 per c.c., in the cream 30,000,000. The modified raw milk taken from the bottles in the morning, averaged 1,200,000 bacteria per c.c.; the Pasteurized, about 1,000; taken in the late afternoon of the same day, they had respectively about 20,000,000 and 50,000.

Twenty-one predominant varieties of bacteria were isolated from six specimens of this milk collected on different days. The varieties represented the types of bacteria frequently found in milk. The infants were selected during the first week in June, and at first all were placed on Pasteurized milk. The 50 infants which had

been selected were now separated into two groups as nearly alike as possible. On June 15, the milk was distributed without heating to one-half the infants, the other half receiving as before the heated milk. In this way the infants in the two groups received milk of identically the same quality, except for the changes produced by heating to 165° F. for thirty minutes. The infants were observed carefully for three months and medical advice was given when necessary. When severe diarrhea occurred barley water was substituted for milk.

The first season's trial gave the following results. Within one week 20 out of the 27 infants put on the raw milk suffered from moderate or severe diarrhea; while during the same time only 5 cases of moderate, and none of severe diarrhea occurred in those taking Pasteurized milk. Within a month 8 of the 27 had to be changed from raw back to heated milk, because of their continued illness; 7 or 25 per cent. did well all summer on raw milk. On the other hand of those receiving the Pasteurized milk, 75 per cent. remained well, or nearly so, all summer, while 25 per cent. had one or more attacks of severe diarrhea. There were no deaths in either group of cases.

During the second summer a similar test was made with 45 infants. Twenty-four were put on raw modified milk; 13 of these had serious diarrhea, in 5 of whom it was so severe that they were put back upon heated milk; 10 took raw milk all summer without bad effects; 2 died, 1 from gross neglect on the part of the mother, the other from diarrhea. Of the 21 on Pasteurized milk, 5 had severe attacks of diarrhea, but all were kept on this milk except for short periods, when all food was omitted; 16 did well throughout the summer. One infant, markedly rachitic, died.

The outcome of these observations during the two summers are summarized in the following table:—

Kind of Milk.	Number of infants.	Remained well for entire summer.	Number having severe or moderate diarrhea.	Average number days off milk during summer.	Average weekly gain in weight.	Average number days diarrhea.	Deaths.
Pasteurized milk, 1,000 to 50,000 bacteria per c.c.	41	31	10	3	4 oz.	3.9	1
Raw milk, 1,200,000 to 20,000,000 bacteria per c.c.	51*	17	34	5.5	3.5 oz.	11.5	2

Although the number of cases was not large, the results, almost identical during the two summers, indicate that even a fairly pure milk when given raw, in hot weather, causes illness in a much larger percentage of cases than the same milk given after Pasteurization. A considerable percentage of infants, however, do apparently quite as well on raw as on Pasteurized milk.

Observations Upon the Use of Feeding Raw and Heated Milk in Older Children.—The children over three years of age who received unheated milk, containing at different times from 145,000 to 350,000,000 bacteria per c.c., showed almost no gastro-intestinal disturbance. The conditions at three institutions will serve as examples.

In the first of these an average grade of raw milk was used which, during the summer contained from 2,000,000 to 30,000,000 bacteria per c.c. This milk was stored in an ice-box until required. It was taken by the children unheated and yet no case of diarrhea of sufficient gravity to send for a physician occurred during the entire summer. This institution was an orphan asylum containing 650 children from three to fourteen years of age; viz., three to five years, 98; five to eight years, 162; eight to fourteen years, 390.

A second institution used an unheated but very pure milk which was obtained from its own farm. This milk averaged 50,000 bacteria per c.c. The inmates were 70 children of ages ranging from three to fourteen. In this institution not a single case of diarrheal disease of any importance occurred during the summer.

In a third institution an average grade of milk was used which was heated. This milk before heating contained 2,000,000 to 20,000,000 bacteria per c.c. The institution was an infant asylum in which there were 126 children between the ages of two and five years. There were no cases of diarrhea during the summer.

These clinical observations taken in connection with the bacteriological examination at the laboratory show that, although the milk may come from healthy cattle and clean farms, and be kept at a temperature not exceeding 60° F., a very great increase in the number of bacteria may occur. Furthermore, this may occur without the accumulation in the milk of sufficient poisonous products or living bacteria to cause appreciable injury in children over three years of age, even when such milk is consumed in considerable amount and for a period extending over several months. Milk kept at temperatures somewhat above 60° F. was not met with in our investigations, but the histories of epidemics of ptomain poisoning teach that such milk may be very poisonous. It is also to be remembered that milk abounding in bacteria on account of its being carelessly handled is also always liable to contain pathogenic organisms derived from human or animal sources.

Results with Very Impure Milk Heated vs. Those with Pure or Average Milk Heated.—During the summer of 1901, we were able to observe a number of babies fed on milk grossly contaminated by bacteria. In 1902, a systematic oversight of all stores selling milk was instituted by the Health Department, so that the very worst milk was not offered for sale that summer.

* Thirteen of the 51 infants on raw milk were transferred before the end of the trial to Pasteurized milk because of serious illness. If these infants had been left on raw milk, it is believed by the writers that the comparative results would have been even more unfavorable to raw milk.

TABLE SHOWING THE RESULTS OF FEEDING DURING JULY AND AUGUST, 1901, IN TENEMENT HOUSES, OF 112 BOTTLE-FED INFANTS UNDER ONE YEAR OF AGE, AND OF 47 BOTTLE-FED INFANTS BETWEEN ONE AND TWO YEARS OF AGE WITH MILK FROM DIFFERENT SOURCES, AND THE NUMBER OF BACTERIA PRESENT IN THE MILK.

Character of milk.	Infants under one year.					Infants over one year.				
	Number of infants.	Average weekly gain.	Diarrhea. Mild.	Severe.	Deaths.	Number of infants.	Average weekly gain.	Diarrhea. Mild.	Severe.	Deaths.
(1) Pure milk boiled and modified at dispensary or stations; given out in small bottles. Milk before boiling averaged 20,000 bacteria per c.c.; after boiling 2 per c.c.	41	3 oz.	10	8	1*	.....	.....	.....	.....	.....
(2) Pure milk 24 hours old, sent in quart bottles to tenements, heated and modified at home. 20,000 to 200,000 bacteria per c.c. when delivered.	23	4⅛ "	8	5	0	24	4½ oz.	8	2	0
(3) Ordinary milk 36 hours old, from a selected group of farms, kept cool in cans during transport; 1,000,000 to 25,000,000 bacteria per c.c., heated and modified at home before using.	18	4 "	6	6	1†	12	4 "	1	2	0
(4) Cheap milk, 36 to 60 hours old, from various small stores, derived from various farms, some fairly clean, some very dirty; 400,000 to 175,000,000 bacteria per c.c.	21	¼ "	4	13	4‡	7	⅓ "	1	3	0
(5) Condensed milk of different brands. Made up with hot water. As given, contained bacteria from 5,000 to 200,000 per c.c.	9	⅛ "	5	2	3	4	3⅞ "	1	3	0
(6) Breast Milk	16	2¼ "	5	2	0					

The observations upon the impure milk of 1901 are of sufficient importance to be given in detail, although already mentioned in this report in the observations upon infants of both summers which were fed on "store milk." A group of over 150 infants was so divided that 20 per cent. were allowed to remain on the cheapest store milk which they were taking at the time. To about the same number was given a pure bottled milk from Briarcliff Farms, sent to their homes free of charge by Mr. Walter W. Law. A third group was fed on the same quality of milk as the second, but sterilized and modified at the Good Samaritan Dispensary. A fourth group received milk from an ordinary dairy farm. This milk was sent to a store in cans and called for by the people. A few infants fed on breast and condensed milk were observed for control.

In estimating the significance of the observations recorded in the tables, one should bear in mind that not only do different infants possess different degrees of resistance to disease, but that, try as hard as the physicians could, it was impossible to divide the infants into groups which secured equal care, and were subjected to exactly the same conditions. It was necessary to have the different groups in somewhat different parts of the city. It thus happened that the infants on the cheap store milk received less home care than the average, and that those on the pure bottled milk lived in the coolest portion of the city. Certain results were, however, so striking that their interpretation is fairly clear. It is to be noted that the number of infants included in each group is small.

There is nothing in the observations to show that fairly fresh milk from healthy cows, living under good hygienic conditions and containing, on some days, when delivered, as many as 200,000 bacteria per c.c., had any bacteria or any products due to bacteria that remained deleterious after the milk was heated to near the boiling point.

On the other hand it is possible that certain varieties of bacteria may, under conditions that are unsanitary, find entrance to milk and survive moderate heat or may develop poisonous products resistant to heat in sufficient amount to be harmful, even when they have accumulated to less than 200,000 per c.c.

Turning now to the results of feeding with milk which has been heated and which before sterilization contained from 1,000,000 to 25,000,000 bacteria per c.c., averaging about 15,000,000, though obtained from healthy cows living under fairly decent conditions and kept moderately cool in transit, we find a distinct increase in the amount of diarrheal disease. Though it is probable that the excessive amount of diarrhea in this group of children was due to bacterial changes which were not neutralized by heat or to living bacteria which were not killed; yet it is only fair to consider that the difference was not very great and that the infants of this group were under surroundings not quite as good as those on the purer milk.

Finally, we come in this comparison to the infants who received the cheap store milk Pasteurized. This milk had frequently to be returned because it curdled when boiled, and contained, according to the weather, from 4,000,000 to 200,000,000 bacteria per c.c. In these infants the worst results were seen. This is shown not only by the death rate, but by the amount and the severity of the diarrheal diseases, and the general appearance of the children as noted by the physicians. Although the average number of bacteria in the milk received by this group is higher than that received by the previous group, the difference in results between this group and the previous one can hardly be explained by the difference in the number of bacteria. The varieties of bacteria met with in this milk were more numerous than in the better milk, but we were unable to prove that they were more dangerous. Probably the higher temperature at which the milk was kept in transit and the longer interval between milking and its

* This infant died from enteritis and toxemia.
† This infant died of pneumonia. There had been no severe intestinal disorder noted.
‡ One of the four had pertussis, the remaining three died from uncomplicated enteritis.

use allowed more toxic bacterial products to accumulate.

Observations Upon Milk Feeding in Institutions.—During the summer of 1901, observations were made by Dr. Long in nearly all the institutions for children situated in New York City. He found, with three exceptions, that no particular care was taken to secure a supply of pure milk. Samples taken from the supply of the other institutions showed that the milk averaged over 1,000,000 bacteria per c.c. when delivered, and at half of them it averaged over 10,000,000 per c.c. The cream frequently contained 60,000,000 bacteria per c.c. The milk at two places contained at times over 100,000,000. At several special hospitals for young children the milk and cream contained on different days from 26,000,000 to 157,000,000 bacteria per c.c. Formaldehyde was also occasionally found, especially in the cream. Samples of milk were taken weekly from most of the institutions and examined as to the number of bacteria and in some cases also as to the varieties present.

As a rule to the children who were over three years old the milk was given raw, while for those under two years it was heated (sterilized). For those between two and three years, it was sometimes heated, sometimes not. In only two institutions was it possible to trace any epidemic of diarrhea among the infants and older children, and in these, the particulars of which are given below, the results cannot be reasonably attributed to the milk.

The first epidemic of diarrhea occurred at the New York Infant Asylum during June and July, 1901. There were in the institution 86 infants; 30 of these were bottle-fed and 56 were on breast milk. Of the 30 bottle-fed infants, 22 suffered from diarrhea. Of the 56 breast-fed infants, only 7 were affected. The epidemic was mild in character, only 2 infants dying.

This epidemic, which occurred during and after a period of very hot weather, at first glance might be ascribed to the milk. The fact, however, that 7 cases occurred among the breast-fed infants, that the cases occurred from time to time, not simultaneously, and that the milk used had been previously heated, points rather to an infection communicated from the sick to the well than to one conveyed by the milk, unless it was true that the milk had been contaminated in the wards.

In another institution an epidemic of moderately severe diarrhea occurred during the winter, in which at first all the cases came from one ward, and then later from a second ward. In this epidemic, infection through the milk was not conceivable, since the bottle-fed infants in the wards where no illness occurred received milk from the general supply.

General Conclusions.—In addition to the statistical reports of their observations, the different physicians who watched the infants in their homes were asked to state their own conclusions regarding the general problem of infant-feeding in the tenements. These general impressions are most suggestive and cannot fail to be of interest to all who are working at this difficult problem.

It was practically the unanimous opinion that the most important factor in securing good results is intelligent care. This covers much: clean bottles and nipples; the willingness and ability to carry out directions as to methods of feeding, quantities, frequency, the stopping of milk at the first signs of serious diarrhea, etc.; proper care ot the milk itself while in the house, and methods of sterilizing; suitable clothing and cleanliness of the children, and as much fresh air as possible.

Most of the physicians stated that, leaving out the very worst store milk in summer, the results were much less affected by the character of the milk than they had anticipated, and distinctly less than by the sort of care the infants received.

The surroundings alone had much less influence on results than was anticipated. For not only were breast-fed infants found doing well under the most unfavorable surroundings, but those also who received only the bottle as a rule did well, provided they received intelligent care and good milk.

The depressing effects of great atmospheric heat, *i.e.*, a temperature in the neighboorhood of 90° F., or over, were very marked in all infants no matter what their food. Those who were ill were almost invariably made worse, and many who were previously well became ill. A bad method of feeding, or rather a feeding without any method, was responsible for many failures when the milk itself was of good quality. Common mistakes were, feeding an infant every time it cried; giving it a full bottle no matter what the age of the child, and letting it take as much as it would; preparing a large bottle of food at one time, and warming it over from time to time until the child had taken the whole of it, or allowing the milk to turn sour in the feeding bottle. Quantities proper for single feedings were almost invariably disregarded. Proper washing of feeding bottles was seldom seen in a tenement house. Such matters as these are closely connected with intelligent care, which has been already considered.

The importance of the matters just mentioned, raises the question of how much can be accomplished by the distribution of printed slips of directions. It was the observation of the physicians that comparatively little can be accomplished by these alone. Such printed circulars are often treated by the tenement-house mother very much as most of us treat the printed advertisements which are left at our doors—seldom read and soon thrown away. Mothers are often anxious and willing, but ignorant and stupid. Many cannot read and many more have not the wit to apply in practice what they read. When however, such printed advice was preceded or accompanied by personal explanation, it was found of great assistance. Personal contact is the only sure way to influence these people, and this must be frequently repeated to influence them permanently; as an aid to this, printed slips are useful. Printed direc-

tions, however, should be as simple as possible in statement, few in number, and touch only the most vital matters, telling the mother always what she is to do, not what she is not to do.

Summary.—The observations here recorded were made upon the groups of infants for periods of about three months only, and the conclusions drawn relate especially to the more immediate effects of the milk.

1. During cool weather neither the mortality nor the health of the infants observed in the investigation, was appreciably affected by the kind of milk or by the number of bacteria which it contained. The different grades of milk varied much less in the amount of bacterial contamination in winter than in summer, the store milk averaging only about 750,000 bacteria per c.c.

2. During hot weather when the resistance of the children was lowered, the kind of milk taken influenced both the amount of illness and the mortality; those who took condensed milk and cheap store milk did the worst, and those who received breast milk, pure bottled milk, and modified milk did the best. The effect of bacterial contamination was very marked when the milk was taken without previous heating; but, unless the contamination was very excessive, only slight when heating was employed shortly before feeding.

3. The number of bacteria which may accumulate before milk becomes noticeably harmful to the average infant in summer, differs with the nature of the bacteria present, the age of the milk, and the temperature at which it has been kept. When milk is taken raw, the fewer the bacteria present the better are the results. Of the usual varieties, over 1,000,000 bacteria per c.c. are certainly deleterious to the average infant. However, many infants take such milk without apparently harmful results. Heat above 170° F. (77° C.) not only destroys most of the bacteria present, but, apparently, some of their poisonous products. No harm from the bacteria previously existing in recently heated milk was noticed in these observations unless they had amounted to many millions, but in such numbers they were decidedly deleterious.

4. When milk of average quality was fed sterilized and raw, those infants who received milk previously heated did, on the average, much better in warm weather than those who received it raw. The difference was so quickly manifest and so marked that there could be no mistaking the meaning of the results. The bacterial content of the milk used in the test was somewhat less than in the average milk of the city.

5. No special varieties of bacteria were found in unheated milk which seemed to have any special importance in relation to the summer diarrheas of children. The number of varieties was very great, and the kinds of bacteria differed according to the locality from which the milk came. None of the 139 varieties selected as most distinct among those obtained, injured very young kittens when fed in pure cultures. A few cases of acute indigestion were seen immediately following the use of Pasteurized milk more than thirty-six hours old. Samples of such milk were found to contain more than 100,000,000 bacteria per c.c., mostly spore-bearing varieties. The deleterious effects, though striking, were not serious nor lasting. At the present time there is in New York City, no general sale from stores of "Pasteurized" or "sterilized" milk, so that it is here very rare for such milk to be used thirty-six hours after heating.

6. After the first twelve months of life, infants are less and less affected by the bacteria in milk derived from healthy cattle. According to these observations, when the milk had been kept cool the bacteria did not appear to injure the children over three years of age, at any season of the year, unless in very great excess.

7. Since a large part of the tenement population must purchase its milk from small dealers, at a low price, everything possible should be done by Health Boards to improve the character of the general milk supply of cities by enforcing proper legal restrictions regarding its transportation, delivery, and sale. Sufficient improvements in this respect are entirely feasible in every large city to secure to all a milk which will be wholesome after heating. The general practice of heating milk which has now become a custom among the tenement population of New York is undoubtedly a large factor in the lessened infant mortality during the hot months.

8. Of the methods of feeding now in vogue that by milk from central distributing stations unquestionably possesses the most advantages, in that it secures some constant oversight of the child, and since it furnishes the food in such a form that it leaves the mother least to do, it gives her the smallest opportunity of going wrong. This method of feeding is one which deserves to be much more extensively employed, and might, in the absence of private philanthropy, wisely be undertaken by municipalities and continued for the four months from May 15 to September 15.

9. The use, for infants, of milk delivered in sealed bottles, should be encouraged whenever this is possible, and its advantages duly explained. Only the purest milk should be taken raw, especially in summer.

10. Since what is needed most is intelligent care, all possible means should be employed to educate mothers and those caring for infants in proper methods of doing this. This, it is believed, can most effectively be done by the visits of properly qualified trained nurses or women physicians to the homes supplemented by the use of printed directions.

11. Bad surroundings, though contributing to bad results in feeding are not the chief factor. It is not, therefore, merely by better housing of the poor in large cities that we will see a great reduction in infant mortality.

12. The observations indicate that close percentage modification of milk, although desirable in difficult cases, is not necessary to obtain excellent results with the great majority of infants,

and that a certain adjustment of a healthy infant to its food is usually soon secured.

13. While it is true that even in the tenements the results with the best bottle-feeding are nearly as good as average breast-feeding, it is also true that most of the bottle-feeding is at present very badly done so that as a rule the immense superiority of breast-feeding obtains. This should, therefore, be encouraged by every means, and not discontinued without good and sufficient reasons. The time and money required for artificial feeding, if expended by the tenement mother to secure better food and more rest for herself, would often enable her to continue nursing with advantage to her child.

14. The injurious effects of table food to infants under a year old, and of fruits to all infants and young children in cities, in hot weather, should be much more generally appreciated.

THE DEGREE TO WHICH SUBSTANCES AGGLUTINATING THE DYSENTERY BACILLI ARE PRESENT IN THE BLOOD OF NON-INFECTED PERSONS.*

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THIS study was undertaken to determine (1) whether the different varieties of the dysentery bacillus of Shiga, would not react with serum from individuals suffering from various diseases (2) whether the acid and the non-acid types would not react differently with the same serum and (3) whether, if the bacilli reacted with the blood of adults the blood of infants also possessed the agglutinating substance. Recent observations tend to show that reaction of these bacilli to non-dysenteric serum does occasionally occur in fairly high dilutions, but the data so far obtained have been insufficient to determine the exact extent to which this reaction takes place. Several rather interesting questions rest on these observations. In the first place, can it be predicated that agglutination of dysentery bacilli of the various types, occurs only with diluted serum from patients suffering, or having recently suffered, from infection with one or more types of dysentery bacilli; and in the second place, if in some dilution it does so occur, within what limits can it be regarded as proof of such infection.

It has been held by various observers, including Shiga, Flexner, Kruse and others, that the agglutination of the dysentery bacilli which is caused by the serum of patients suffering from acute epidemic dysentery, and which resembles the Gruber-Widal reaction, is sufficiently distinctive to be pathognomonic of that disease. Shiga, Kruse, Flexner, Park and Dunham, Strong, and Vedder and Duval all succeeded in isolating from dysenteric stools bacilli which gave the specific reaction and which have been until recently regarded by the investigators themselves as practically identical in all respects. Vedder and Duval, after an exhaustive comparative study of all these bacilli, came to the following conclusion, as set forth in the *Journal of Experimental Medicine*, for February, 1902: "We are therefore forced to the conclusion that the cultural characteristics are essentially alike;" and "we have been unable to discover any real or constant differences between the varieties." This study included bacilli isolated by themselves in Philadelphia, New Haven and Lancaster.

Speaking of the various bacilli, Dr. Flexner says, in the *University of Pennsylvania Medical Bulletin*, August, 1901: "The serum reactions have been of greatest importance. They are, moreover, unmistakable in significance; they indicate close relationship between the bacilli from Japan, Manila, Porto Rico and Germany, and they further render probable the identity of the epidemic dysentery of this country with that of the East and Germany." Dr. Flexner's comparative study included cultures obtained from Shiga, Kruse, Strong, and from his own assistants and no essential differences were found. Such morphological variations as were observed were referred to the medium, the temperature, and the rapidity of division and growth. Kruse laid no stress on differences found. Shiga says in his article on dysentery in *Twentieth Century Medicine*: "I have shown that Flexner's and Kruse's bacilli were agglutinated by the serum of a dysenteric patient in Japan and that therefore this test is sufficient to establish their identity with my own *Bacillus dysenteriæ*."

Several extensive outbreaks of dysentery occurring in this country were studied by Drs. Park and Dunham (*N. Y. Univ. Bulletin of the Medical Sciences*, Oct., 1902), including cases occurring at Tuckahoe, Mount Vernon and Waverly, in New York, Lakewood, N. J., Seal Harbor, Me., and a few in New York City. The dysentery bacilli were obtained from a typical case in Seal Harbor, from a similar case in Tuckahoe and from a number in New York City. In many cases in which no cultures were attempted serum was obtained and all of those having typical dysentery symptoms and giving a positive serum reaction were regarded as probably due to one or more of the varieties of the Shiga bacillus. Nearly all of the Tuckahoe cases gave a positive reaction, either typical or fairly so, within one hour in a 1 to 10 dilution. Twelve out of the 22 cases examined gave a positive reaction in a 1 to 50 dilution within one hour. These tests were made from four to eight weeks after the abatement of symptoms. Three months later the reaction was much weaker. Four out of six cases examined at Mount Vernon gave a positive reaction within one hour in a 1 to 20 dilution. Of the Lakewood cases three were examined two months after convalescence was established. One gave prompt reaction in a 1 to 50 dilution, another gave a moderate reaction, and the third was negative. Of the cases at Seal Harbor one gave a positive re-

*Wm. T. Lusk Memorial Prize Essay, 1903.

action and another gave none. Of cases in New York 8 out of 18 gave a positive reaction in one hour in a 1 to 10 dilution. Three of these cases had simple diarrhea symptoms and failed to react.

The acid-producing type of the Shiga bacillus was obtained from a number of cases of dysentery at the Foundling and Babies' hospitals by Dr. Martha Wollstein and at the Nursery and Child's Hospital by Dr. Katherine R. Collins. The ages of the infants varied from a few months to several years. The blood serum gave a positive reaction in about one-half the cases with the Shiga from those obtained by Shiga in Japan and Flexner in New Haven. They also differ from the latter in producing indol in peptone solution."

In regard to agglutination, Shiga says "That the blood of dysenteric patients during convalescence is able to agglutinate the *Bacillus dysenteriæ* (so-called Widal reaction), I have proven by hundreds of observations. Some reactions are positive in 1 to 130 dilutions. Usually, however, the reaction is positive in 1 to 20 or 50 dilutions. Occasionally in mild dysentery the reaction is negative." . . . "The agglutination tests

REACTIONS (CHILDREN UNDER FIVE YEARS)

	AGE	TIME	DILUTIONS (SHIGA) 1-10	1-20	1-50	1-100	DILUTIONS (FLEXNER) 1-10	1-20	1-50	1-100
Bronchitis (mild)	4 years	3½ hours	F	S	N	N	S	N	N	N
" "	17 months	3 "	S	S	N	N	S	N	N	N
" "	9 "	2½ "	N	N	N	N	N	N	N	N
" "	18 "	3 "	S	N	N	N	S	N	N	N
" "	16 "	3 "	S	N	N	N	S	N	N	N
Indigestion	23 days	3½ "	N	N	N	N	N	N	N	N
"	7 months	3 "	N	N	N	N	N	N	N	N
"	3 "	3 "	N	N	N	N	N	N	N	N
"	3½ "	3 "	N	N	N	N	N	N	N	N
Cretinism	4 years	3½ "	G	F	S	N	F	F	N	N
Enuresis	4 "	3 "	S	N	N	N	N	N	N	N
Eczema	3½ "	3 "	G	F	S	N	F	F	N	N
Otorrhea	4½ "	3 "	F	G	S	S	F	F	S	N
Infantile syphilis	7 months	3 "	N	N	N	N	N	N	N	N
Acute rhinitis	10 "	3 "	S	N	N	N	S	N	N	N
Follicular tonsillitis	3 years	3 "	S	N	N	N	F	S	N	N
Pertussis	2 "	3 "	S	N	N	N	N	N	N	N
Varicella	3 "	2½ "	S	S	N	N	S	S	N	N
INTESTINAL CASES										
Enteritis (alcoholic)	Adult	3 hours	C	G	S	S	G	S	S	S
"	"	3 "	G	S	N	N	G	S	N	N
Typhoid	"	3 "	G	F	S	S	G	G	G	G
"	"	3 "	G	S	G	S	G	G	G	G
Appendicitis	10 years	2½ "	G	G	G	N	G	G	N	N
"	9 "	3 "	G	C	G	F	G	C	F	S
"	11 "	3 "	G	F	F	F	F	F	S	F
Total cases, 114										
Complete reaction			7	1	0	0	1	1	0	0
Good "			49	18	4	0	31	8	2	2
Fair "			32	36	13	3	31	19	7	1
Slight "			20	38	54	26	40	44	24	12
Negative "			6	21	43	85	11	42	81	99
			114	114	114	114	114	114	114	114

bacillus (Flexner's acid-producing culture) in a 1 to 50 dilution.

In 13 cases of dysentery in adults in New York City Dr. Park obtained in 7 a positive serum reaction in a dilution above 1 to 20. Under "The Agglutination of the Shiga Bacillus by Sera from Cases in which no Suspicion of Shiga Bacillus Infection Exists," Drs. Park and Dunham say: "We have met with four sera from patients in whom no suspicion of infection with dysentery bacilli existed which agglutinated the Shiga bacillus in dilutions of 1 to 100. The bacilli from Seal Harbor and New York cases agree in agglutination properties with those sent us by Dr. Flexner, obtained from Manila and Baltimore, but differ conducted with the blood of persons sick with other diseases or healthy individuals were always negative, although such tests were tried (blood serum or blister exudate) in 12 healthy persons, 16 cases of typhoid fever, 3 of intestinal catarrh, 3 of beriberi." Shiga suggests that the agglutinating power of a serum may vary not only with the character of the epidemic, but also with the nationality of the patient. "Especially must it be mentioned that the maximum limit of the agglutination varies according to the technic employed and the individual judgment of the observer." In summing up he says further: "*Bacillus dysenteriæ* is agglutinated only by the blood of dysenteric patients; never by the blood of those

sick with other diseases or of healthy individuals."

In the *Deutsche medicinische Wochenschrift*, Oct., 1900, p. 637, Kruse says that many of the sera examined by him gave a reaction in dilutions of 1 to 100, 1 to 250, and one in a dilution of 1 to 1,000, while 25 specimens from well persons were either negative or gave a reaction only in dilutions of 1 to 10 or 1 to 20. Flexner found that with the Shiga, Kruse and Flexner bacilli "normal blood controls (1:10) were uniformly negative," but does not state how much time was allowed for reaction to occur. Lieut. Strong (Report Surg. Gen. of Army, 1900) tested his Manila bacillus with serum from 100 individuals. Of these 12 were well and the others were suffering from various disorders, as malaria, typhoid, rheumatism, tuberculosis, venereal diseases, paraplegia, abscess, acute mania, constipation, diarrhea, bronchitis, dengue, sprue, and 17 were surgical cases. Two gave a previous history of dysentery. In all these cases a 1 to 10 dilution was employed and observation made at the end of thirty minutes. The result showed a partial reaction in the case of one healthy individual and a positive reaction in one surgical case. The rest were all negative. Dr. Strong says: "The dilutions of blood serum used may be considered rather low for the time limit, but these 100 reactions seem to show that the agglutination does not occur with ordinary blood serum in these dilutions." He does not show by his table whether the two cases which did react were those which had previously suffered from dysentery. Dr. Strong in a letter to Dr. Flexner says, "The agglutination reaction is not invariable."

In the *Bulletin of the Johns Hopkins Hospital* for 1900, XI, p. 231, Dr. Flexner says, speaking of the agglutination test: "While the absolute value of this test in determining the specificity of bacteria may be open to doubt, its use in differentiation is now unquestioned." By this test a bacillus was separated (in Manila) of which he says on page 39: "Agglutination was constant and sensitive with blood-serum of host as well as the sera of other individuals suffering from dysentery. Inactive with normal serum and serum from cases of typhoid fever, malaria, and beriberi."

Vedder and Duval obtained positive agglutination reactions with dysenteric sera in one hour and in dilutions varying from 1:30 to 1:500. Loose skein clumping was observed by them and also by Kruse and Flexner. Shiga's antidysenteric serum clumped the Shiga bacillus in dilutions of 1 to 300 and 1 to 500, but failed to clump the acid-producing (Flexner) type in the same dilutions. Vedder and Duval remark that: "While the agglutinating properties of the bacilli from different sources are very much the same still there are differences in degree." (This I found to be true in my own observations of the Shiga and acid [Flexner] bacilli.) "Normal blood was frequently used as a control for the specific sera. We never obtained an agglutination in any of these control tests, no matter what dilution was used."

The Bacilli.—The bacilli employed were from Shiga's Japan (alkali type) and Flexner's Manila (acid type) cultures. They answered in all respects to the descriptions of the various observers, being slender rods with rounded ends, about 1 to 3 microns in length, appearing singly, sometimes also in pairs, but having no tendency to form groups. On agar and glucose agar involution forms rapidly developed and the bacilli also showed striking increase in length when multiplying in broth. They grew well both at room temperature and in the incubator. On agar and glucose agar the streak gave a growth of uniform width, at first whitish gray and translucent and later becoming yellowish or creamy and opaque, with crenated edges. Broth was uniformly clouded with sedimentation and no pellicle was formed. No differences in growth between the two were to be found in the ordinary media. The bacilli had very active Brownian movement, but no appreciable motility.

The clumping which occurred varied greatly in degree and was recorded under four heads. Skein clumping was frequently observed as a loose but fairly typical arrangement in which the bacilli were unusually long, were joined end to end and still adhered closely, leaving few or no free bacilli in the field. The term "complete" was applied only to those cases in which there were no free bacilli and in which practically all of the clumps were large. These were sometimes of the skein variety and sometimes much more compact. It is only fair to say that cases which showed as typical a reaction as this were comparatively few. The term "good" was applied to those cases in which there were found large and small clumps and a few free bacilli in the field. These cases were numerous, especially in dilutions of 1 to 10 and 1 to 20. Under the head of "fair" were classified those cases which showed fairly good sized clumps, but a great many free bacilli being found and retaining their Brownian movement to a considerable degree. Those cases were classified as "slight" which showed any uniform grouping, however little, well scattered over the field. In the negative cases there was no uniform attempt at grouping, although in some cases a few bacilli here and there would be found clinging together. The rest were all discrete and showing very active molecular movement.

By this classification an attempt has been made not only to signify the presence of a reaction, but to indicate as nearly as may be the degree of completeness of the clumping which occurred. It is believed that this multiplication of terms will tend to clearness rather than confusion and will contribute somewhat to the scientific exactness of the results. It seems scarcely sufficient to say simply that a reaction has or has not occurred when all degrees of clumping are possible and do occur. It must be remembered that the personal equation enters largely into observations of this sort and perhaps more extended classification may

help to reduce this to a minimum. No doubt many discrepancies in observation are due to individual differences in interpretation of what is seen. It is clearly impossible to create an absolute and arbitrary standard in agglutination work and the most that can be hoped for is a classification which will make the different degrees of clumping intelligible and fairly exact. It is possible that some cases which have been recorded by various observers as negative may have shown slight clumping which was passed over because it could not be considered a typical reaction. It is also quite possible that many of the cases recorded in this paper as showing slight clumping might be regarded by others as entirely negative. It is hoped that the classification employed will make clear what was actually found.

Technique.—These observations were made at the suggestion and under the direction of Prof. W. H. Park, in the Carnegie Laboratory of the New York University and Bellevue Hospital Medical College. The blood specimens were obtained at Bellevue Hospital and in the College Clinic. Inoculation was made upon agar from a stock culture and each day fresh streak cultures were made upon agar or glucose agar slants. These tubes remained in the incubator over night. Each day broth cultures were made from the twenty-four hour growth on agar and these were allowed to remain at room temperature over night for use on the following day. The ordinary hanging-drop preparation was employed and all dilutions were made with plain sterilized water. In all cases a hanging-drop of the plain broth culture was used as a control and this control drop failed to show the slightest clumping with either bacillus in any instance, the appearance corresponding exactly with that observed in specimens recorded as negative. The blood was gathered in capillary tubes and time allowed for the separation of clot and serum to take place. In some cases where this did not occur very thoroughly the drop contained many corpuscles and showed distinct color in low dilutions. It is not believed that this had any material influence upon the results obtained. Shiga used whole blood in many of his tests and places the agglutinating power of the blood at one-half that of the serum alone.

Even in those few cases in which evaporation had taken place through imperfect sealing of the tube, there was no marked difference in the results obtained, although the dilution was necessarily approximate. Observations were made at periods varying from one to eight hours, in the great majority of cases being made at the end of three hours. In the accompanying table "C" stands for complete, "G" for good, "F" for fair, "S" for slight, and "N" for negative.

Results.—The difference between the agglutinating capability of the Shiga and Flexner cultures was quite noticeable. In most instances among the specimens of blood examined the acid type bacillus dropped out first and in a very few instances only did it exceed the alkali bacillus in agglutinating capability. It occasionally happened that the results were perfectly parallel, but these instances were comparatively rare except where no reaction occurred, as with the blood of infants. It is interesting to note that in the only two typhoid specimens which were obtained the Flexner culture gave good clumping in all the various dilutions, while the Shiga culture in one gave a good reaction in only a 1 to 10 dilution and in the other in 1 to 10 and 1 to 50 dilutions. That the clumping in the 1 to 50 dilution exceeded that in the 1 to 20 in this specimen may have been purely accidental, although it occasionally occurred that clumping was better in a 1 to 20 than in a 1 to 10 dilution.

In three cases of appendicitis which were examined the results show a more decided tendency to clump than in most cases not associated with any intestinal lesion. In one the Shiga culture gave good clumping in three hours in dilutions of 1 to 10 and 1 to 50, complete clumping in 1 to 20 and fair clumping in 1 to 100, while the Flexner culture gave good clumping in a dilution of 1 to 10, complete clumping in 1 to 20, fair clumping in 1 to 50 and slight clumping in 1 to 100. In no other instances was complete clumping found in a 1 to 20 dilution. It would be interesting to pursue the investigation farther in regard to appendicitis and typhoid cases. One case of alcoholic enteritis examined gave a marked reaction in a low dilution and some clumping all the way through. The cases of tuberculosis examined showed nothing very noteworthy except that two gave complete clumping with the Shiga bacillus in a 1 to 10 dilution. The cases of pneumonia gave no striking results, but two or three of them were convalescent.

To sum up, those cases which gave complete clumping with the Shiga culture in a 1 to 10 dilution were two of tuberculosis, one of malaria, one of alcoholic enteritis, one of acute pleurisy, one of pernicious anemia, and one surgical case. The only instances in which the Flexner culture gave complete clumping was in a case of pernicious anemia, in a 1 to 10 dilution and in a case of appendicitis in a 1 to 20 dilution. No complete clumping occurred with either culture in a higher dilution than this. The Shiga alkali culture was never negative in all dilutions except in the cases of infants under one year. The Flexner acid culture was negative throughout in the infantile cases, in three children of seven, four and two years, respectively, and in one adult. All patients were adults except those whose age is given in the table.

It was found in all cases of infants under one year that there was a complete absence of reaction, except in one case of a ten months' old child where very slight clumping occurred in a 1 to 10 dilution. While the number of cases examined was not sufficiently large to be conclusive, it seems probable that the agglutinating power in non-dysenteric serum is absent in children under one year. That it may be present in cases of dysentery in a 1 to 50 dilution or over is shown by the cases in

the Foundling and Nursery and Child's hospitals, many of whom were under one year. However, some of the cases in the Foundling and Nursery and Child's hospitals failed to give any reaction. Nearly all the children examined by me who were under five years gave proportionately less clumping than did children above that age. The serum from very few of the children between one year and five years gave any clumping above a 1 to 20 dilution and in only one of them was there good clumping in that dilution. Of all the persons examined there was only one in which there was any clumping whatever in a 1 to 100 dilution. It would seem, then, that the agglutinating power of the serum has some relation to the age of the individual, but this difference is less noticeable above the age of five years and depends greatly upon the intestinal condition. The adults examined included individuals of all ages and various nationalities.

Conclusions.—It is realized that these investigations are only tentative, but they seem to warrant certain conclusions:

1. That the serum of non-dysenteric adult patients does agglutinate the Shiga and acid type (Flexner) bacilli frequently in a 1 to 20 dilution and occasinally in a dilution as high as 1 to 100.

2. That this agglutinating power is wanting in the blood of non-dysenteric young infants (under one year) rarely being present even in a 1 to 10 dilution.

3. That there are certain differences in agglutinating capability between the Shiga and acid type (Flexner) bacilli, the former in these tests clumping somewhat more readily than the latter.

4. That a decided and prompt reaction, under two hours, with the *Bacillus dysenteriæ* in dilutions of 1 to 20 or higher in young subjects (under one year) and in 1 to 50 or higher in older persons who have not recently suffered from chronic or subacute intestinal disease, is probably pathognomonic of acute epidemic dysentery.

GENERAL CONVULSIVE TIC WITH COPROLALIA.

BY HARRY MORELL, M.D.,
OF LITCHFIELD, MINNESOTA.

CONVULSIVE tic or Gilles de la Tourette's disease is a rare motor neurosis characterized by violent involuntary twitchings. The movements, as a rule, affect the face, but in severe cases all the muscles of the body may be involved. Associated with the muscular movements, are explosive utterances which consist of inarticulate cries, sometimes resembling the bark of a dog; these cries or utterances are made suddenly and automatically and accompanied by grimaces and contortions of the facial muscles. At times the patient will shout at the top of his voice obscene or profane words. To this condition coprolalia has been applied. A word heard may be mimicked and parrot-like be repeated over and over again; this is termed echolalia, echokinesis when actions are imitated.

The patient with the fully developed disease suffers a great deal from the spasms, but, generally, retains his intelligence, although it may be impaired when the disease is of long standing. By energetic will power the patient may repress the twitchings for a time, but they return sooner or later with increased frequency and vigor, the same with the coprolalia, if the patient is alone and unobserved and away from noise and excitement, the barking may cease, as it did with the lad whose history is attached. This patient was isolated and did not make any outcry for two or three months, until a fire occurred in the vicinity where he was confined, when the barking and spasms returned and did not abate for a week. The cessation of the tic during work or being occupied with something where the mind is employed, is not only due to self-control, but also to the diversion of the attention.

Author's case of convulsive tic during spasmodic contraction, involving the depressor anguli oris and levator menti muscles.

This distressing affection has been taken for chorea.* "Tis has no more in common with chorea, be it acute or chronic, than it has with epilepsy; indeed, I am inclined to the opinion it has much less. Furthermore, it has absolutely nothing in common with acute, humoral, Sydenham's chorea, nor with degenerative, parenchymatous, Huntington's chorea, and that the term chorea should never be thought of in connection with this disease, and, finally, that tic being in a majority of instances a degenerative neurosis, it conforms in concurrence, in development, in progression, in obstinacy and unresponsiveness to treatment with other degenerative diseases."

Fully developed cases do not offer any difficulty of diagnosis. As long as the tic is confined to the facial muscles it may be confused with localized muscular spasms, but if it extends to the neck muscles the diagnosis is made probable; it is confirmed when coordinated ties are observed. In simple motor tic or tic douloureux convulsive twitching of the facial muscles is observed on the affected side. This is a reflex condition caused by

*Joseph Collins, MEDICAL NEWS, Dec. 11, 1897

irritation of some of the branches of the fif nerve. Habit tic or facial spasm should not confounded with general tic; in these the spas are generally unilateral. In organic disease the cortex, as cortical epilepsy, the spasms a observed to start in the facial muscles but soo extend to the arms and finally over the enti side.

The majority of the cases of this deplorab condition are chronic and progressive in characte Oppenheim has seen cases recover completel Charcot has observed long remissions in son cases. As a rule one would be inclined to giv rather a dubious prognosis as to a complete cure

The following is a short history of one of thes cases associated with coprolalia:

Case.—L. I., a young man eighteen years o age. His father is living and healthy. Hi mother died at the age of forty-three. Cause not known, but it was not a nervous affection. He has five brothers living; all are strong and healthy with the exception of one who is extremely nervous. The patient is robust and of splendid muscular development and, as far as he is aware, was never sick in his life. His father tells me that there were no unusual complications attending the patient's birth, nor convulsions in infancy. There are no anatomical stigmata present. When twelve years old he noticed that the muscles of his face would twitch. This twitching would come on very suddenly and involuntarily. The spasms gradually became more violent and extended to the muscles of the neck, to the shoulders and down to both arms, which twitch violently and simultaneously. Two years later, the lightning-like contractions of the muscles of the face were accompanied by a noise which resembled "hum" and "whea;" these were alternated with a peculiar cry or bark at the top of his voice. Try as he might he could not control them. The patient has been in this condition for the past six years. If any unusual excitement occurs the barking is almost continuous. He says he is a nuisance to himself and everyone who comes within the range of his voice. It matters not where he is—on the street, in a shop or in a theater—he barks incessantly and at other times uses nasty language. He is an attraction wherever he is on account of his peculiar bark or cry and the distressing, uncontrollable facial contortions with the loud spasmodic sniffing.

In regard to the treatment. This patient has been given almost every drug recommended for this condition; in addition various therapeutic measures have been used, as baths, electricity, massage, etc. He has gone the rounds of the hospitals, and various practitioners have treated him, and the result has not been encouraging. When he presented himself to me, I placed him in isolation and gave nitrate of silver in increasing doses. After having been on this treatment for about three weeks the coprolalia had entirely left him and the tic was diminished somewhat. After two months of isolation the barking did not return until a fire occurred in the vicinity of the hos-

tal, when the coprolalia and loud noises re- ned, which lasted a week or so. The patient s in isolation for eight months. During that e he seemed to improve, but after that, when started to go out occasionally, the symptoms adually returned. Since his return to "public e" the disease seems uninfluenced by the treatent given.

The illustration shows plainly the convulsive pasm of the muscles of the face.

HE TREATMENT OF ANTERIOR DISLOCATION OF THE SHOULDER, WITH REPORT OF A CASE IN WHICH REDUCTION WAS PREVENTED BY THE DETACHED GREATER TUBEROSITY.*

BY GEORGE TULLY VAUGHAN, M.D.,

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Dislocation of the shoulder is such a common injury and its treatment so important in order to prevent serious disability that no apology is needed for inviting your attention to what might seem a trite and uninteresting subject. It is variously estimated that from 40 to 65 per cent. of all dislocations are of the shoulder, and of these the large majority—according to Flower, 75 per cent.—belong to the subcoracoid variety. The other two varieties of anterior dislocation, the intracoracoid and subclavicular are very infrequent. In attempting reduction the following methods should be used and in the order given.

1. *Direct Reposition.*—This is one of the oldest methods in use. The surgeon places his fingers beneath and to the inner side of the head of the humerus with thumbs on the acromion process and attempts to press or pull the head of the bone into place. Anesthesia may or may not be necessary. It often succeeds in recent cases with slight muscular contraction and with the head of the bone very slightly displaced.

2. *Extension and Counterextension.*—This is also one of the oldest methods, but one which I believe is not appreciated at its full value. My attention was especially attracted to this method by reading an article by Stimson about two years ago in which he reported ten cases successfully treated, and in no case was it necessary to continue the extension longer than six minutes. Stimson advised the use of a canvas cot with a hole cut in it large enough to let the arm come through. The patient reclines on the cot with his arm projecting through the hole and a weight of about ten pounds attached to the wrist. The method was applied as follows in my cases:

With the patient in the dorsal position, place a folded sheet in the axilla of the dislocated arm and let the ends extend diagonally across, above and below, the opposite shoulder where they are held by an assistant. The surgeon flexes the

* Read at the meeting of the Association of Military Surgeons of the United States, at Boston, May 19, 20, 21, 1903.

forearm on the arm, to relax the biceps, takes hold of the arm with both of his hands just above the elbow and makes gentle, steady traction, at first in the line of the displacement, but as the traction increases, the arm is carried away from the side to an angle of about 45 degrees. The traction is continued, not too strongly, but just enough to make the muscles tense. An assistant should be ready to relieve the surgeon when he becomes tired, as he is apt to do in two or three minutes, and the change should be made without relaxing traction on the arm. In a short time, from one to six minutes, you gain the confidence of the muscles by the gentle steady traction, the spasmodic contraction ceases, the muscles relax and the head of the bone slips into place.

While this method is one of the oldest in use for the reduction of dislocations of the shoulder, there are certain features which, if not new, do not seem to be fully appreciated; namely, the importance of using *gentleness* with *persistence* and no great degree of force, and of keeping up the traction several minutes or until the muscles are tired out.

It is doubtful if this method is of much value in old cases. I have tried it in only two old cases, one a subclavian dislocation of eighteen days' standing, in which a number of attempts at reduction had been made both by laymen and physicians. I tried the traction method for ten minutes while the patient was under the influence of ether, without success, and reduction was finally effected by Kocher's method of manipulation. The other will be reported in the latter part of this paper.

This plan especially appeals to me and seems worthy of trial because: (*a*) It is free from pain; (*b*) it does not require anesthesia; (*c*) it is perfectly safe in recent cases; (*d*) it can be used by the general practitioner who may hesitate to attempt more complicated methods; (*e*) it does not lacerate or injure the tissues and thus interfere with the success of other methods which may be attempted; (*f*) it succeeds in the large majority of cases. During the last two years my assistants and myself at the Emergency and Georgetown University Hospitals have used this method in about 15 cases of recent dislocation with only two failures.

3. *Kocher's Method.*—This is probably the best method of manipulation and should be tried if *direct reposition* and *extension* and *counterextension* fail, but it is painful—usually requiring anesthesia, and in unskilled hands may result in considerable injury to the tissues. It consists of three steps: (*a*) Flex the forearm of the affected side to a right angle with the arm, press the elbow to the side, and rotate the humerus outward by carrying the forearm around until it stands directly out from the side. Unless the humerus rotates outward without difficulty, this method will fail. In some cases it may be made to rotate by making traction in the long axis of the arm. (*b*) Still holding the forearm at right angles to the body, bring the elbow forward or forward and slightly inward until the arm is horizontal. If the head of the bone does not slip into place during the second step, make (*c*) internal rotation by placing the hand on the opposite shoulder and lowering the elbow into position.

4. *Arthrotomy.*—If all three methods given fail in spite of anesthesia, the dislocation should be reduced by arthrotomy, provided the circumstances permit the performance of an aseptic operation. The methods by using the foot, knee, or fist in the axilla are not to be recommended on account of the danger to the axillary vessels, to the circumflex and posterior thoracic nerves, and even to the bones themselves—the humerus or ribs. I have in two cases fractured the ribs of patients with a moderate degree of force—using the fist as a fulcrum in the axilla.

The following case shows the impossibility of reducing some cases of dislocation without arthrotomy:

Case.—J. R., white, male; aged sixty years; farmer; native of Virginia, fell down a flight of stairs January 20, 1903, striking his left shoulder against the doorpost and causing a subcoracoid dislocation. A physician was called and attempted reduction with the foot against the side, by binding the arm to the side over a ball in the axilla, using anesthesia but without success. March 21, two months after the injury, he applied for relief, as he knew there was something wrong with the shoulder. The deltoid was wasted, the acromion prominent, the shoulder joint stiff and the patient suffered considerably from pain in the arm and hand. The head of the bone could be felt beneath the coracoid process. Under ether all methods were tried without success—direct reposition—extension and counterextension, Kocher's method, circumreduction, extension upward, and even with the foot in the axilla. The head of the humerus rotated outward in Kocher's manipulations but reduction could not be effected. An incision was made over the glenoid cavity from the anterior portion of the acromion process down the shaft of the humerus. Bony material was found occupying the glenoid cavity and was at first thought to be new bone but after dissecting it out and examining the humerus, it was recognied as the detached greater tuberosity. Adhesions existed around the margin of the fragment and the glenoid cavity beneath was found smooth and unchanged. Reduction was then easily effected by pressure in the axilla with adduction of the arm.

The wound was closed without drainage; recovery was uneventful and the patient was discharged March 30, nine days after operation. The patient expressed great relief from removal of pressure on the nerves in the axilla.

A Peculiar Action of the Roentgen Rays.—After having subjected a number of rabbits and guinea-pigs to the influence of the Roentgen rays for a number of hours on successive days, A. Schönberg (Münch. med. Woch., Oct. 27, 1903) was astonished to find that all the animals had become sterile. The general health and sexual vigor were normal, but spermatozoa were absent.

THE MORTALITY OF DIPHTHERIA IN PRIVATE PRACTICE UNDER THE ANTITOXIN TREATMENT.

BY JOHN ZAHORSKY, M.D.,
OF ST. LOUIS, MO.

It is generally understood that the ordinary practitioner depends on his own results more than general statistics in estimating the value of a remedy. The published reports of the death-rate of diphtheria under the antitoxin treatment, while giving the opponents of the serum treatment a good field for controversial athletics, really are the least important in convincing the average practitioner. The physician conscientiously tries the antitoxin in a series of cases, his results are so much better than on any other treatment, and henceforth a little debate on the relative value of certain statistics gathered from hospitals and foundling asylums, makes no impression on his convictions.

Some months ago, in studying the mortality statistics given by recent authorities, I felt convinced that the figures are far in excess of the death-rate of diphtheria in private practice. Thus, for several years I have not had a single death, and in speaking to other physicians I was informed also that their death-rate was almost nothing.

I resolved, therefore to collect a few statistics among the physicians of St. Louis. I wrote to about one dozen physicians, who, I knew, had large practices among children, and who, I was sure, were ardent advocates of the antitoxin treatment, and used it promptly in every case. I was also assured that these gentlemen took pains to get a good serum and used it in sufficient doses. The answers really surprised me.

As the first two years of the antitoxin treatment was really in the experimental stage, the inquiry related to the last five years (1898-1902). But before giving these figures, it might be profitable to notice briefly some of the statistics on this subject.

	Per cent.
American Pediatric Society's Collective Investigation, mortality	13.7
Siegert (Jahrb. f. Kinderh., 1900), mortality	16.4
Spolverini (Il Policlinico, 1900), mortality	16.
Report of Health Department, Chicago, 1901, mortality	6.8
Report of Mass. State Board of Health, 1900, mortality	10.4

Various reports from Health Officers in England and Germany give the average mortality as about 15 per cent. Of course this includes all cases, in hospitals, asylums, moribund cases, and cases in infants of low vitality.

The collective investigation of the American Pediatric Society was made while the use of the serum was still in the experimental stage.

In the following table I give the number of cases treated by the physicians, who kindly responded to my inquiry. It should be understood that these patients were treated by the physicians from the beginning, and do not include moribund cases seen in consultation.

	No. Cases.	Deaths.
Dr. B. Bribach	150	1
Dr. H. A. Auler	627	7
Dr. E. W. Saunders	220	0
Dr. L. H. Behrens	20	0
Dr. M. J. Hopkins	38	0
Dr. E. W. Eberlein	61	5
Dr. W. S. Barker	250	7
Dr. G. M. Tuttle	60	3
Dr. J. C. Falk	80	1
Dr. W. L. Johnson	17	0
Dr. M. J. Lippe	32	0
Dr. John Zahorsky	55	0
Total	1,610	24

Mortality, 1.5 per cent.

Instead of 10 or 15 per cent., the death-rate in private practice should be not over two per cent. This includes laryngeal cases, many of which were intubated.

Dr. Bribach's only death was in a young infant with laryngeal diphtheria, the tube had been expelled and the infant was considered almost well, but the parents failed to notify the doctor when the stenosis appeared again.

Dr. Auler reports that several of his cases were practically moribund, and really should not be counted in. Out of 27 laryngeal cases treated with antitoxin and intubation, he lost only two.

Dr. L. E. Newman writes that in an extensive family practice, he has not had a single death since he uses antitoxin.

Dr. E. M. Senseney was among the first to use the serum in this city, and has had no death from this disease since.

Dr. E. W. Saunders feels that no patient suffering with diphtheria should die. A death means an error in technic, and not in the inefficiency of the serum treatment. In every suspected case he at once injects antitoxin and gives pilocarpine internally. He insists on a reliable serum, and the initial dose should be large enough to certainly neutralize all toxin in the blood and all that may be formed in the next few days.

From this correspondence I gather that, while these physicians have full confidence in the antitoxin curing diphtheria in a child who has an average constitutional resistance to disease, they admit that certain errors may be made, which may here and there cost a life.

The following are some of the common mistakes which may end disastrously:

(1) A diagnosis of simple tonsillitis is made and the patient is not seen for several days, when a severe case of diphtheria is found; (2) an insufficient dose of antitoxin is injected; (3) a worthless serum is injected, one either too old or prepared by an unreliable manufacturer; (4) a diagnosis of simple laryngitis is made in a primary laryngeal diphtheria.

Dr. Bribach makes it a rule to inject antitoxin at once in every case in which he cannot with certainty exclude diphtheria. He has had only one

death in five years and this he attributes to the carelessness of the parents.

While these reports are so gratifying, many deaths from diphtheria occur in St. Louis. I have been consulted in three moribund cases treated by physicians who had not made the diagnosis, or, at least, did not use the serum. Another case was given up by the attending physician (who did not believe in antitoxin), but was still saved by intubation and antitoxin.

Dr. Lippe related to me that he saw one child dead and the other dying in a family where a quack was in attendance.

I do not believe these statistics are singular, for I believe they can be duplicated anywhere, where physicians believe in the efficacy of diphtheria antitoxin and know how to use it.

MEDICAL PROGRESS.

MEDICINE.

A New Test for Bile in the Urine.—Since the usual bile-tests have proven very unreliable in the hands of A. Jolles (Deutsch. Arch. f. klin. Med., Vol. 78, Nos. 1 and 2), the following one is recommended: Ten cubic centimeters of urine are mixed in a test-tube with 2 to 3 c.cm. of chloroform and 1 c.cm. of a 10-per-cent. solution of borium chloride. The mixture is then centrifuged, the fluid above the chloroform and precipitate poured off, and the tube filled with distilled water, shaken and centrifuged a second time. In case of dark-colored urines this is repeated a third time. After the water is decanted, the chloroform and precipitate are shaken with five cubic centimeters of alcohol and then two or three drops added of an iodine solution, which is prepared as follows: 0.63 gm. of iodine and 0.75 gm. of corrosive sublimate are each dissolved separately in 125 c.cm. of alcohol, poured together, and then 250 c.cm. of pure hydrochloric acid added. In the presence of even faint traces of bile, a distinct green color is obtained. The reaction can be hastened by placing the test tube into hot water for a few minutes. Indican or hemoglobin do not interfere with the reaction. The presence of one-tenth milligram of bilirubin in 100 c.cm. of urine still gives a positive reaction.

Influence of Water on Nephritis.—In acute and chronic nephritis, L. Mohr and C. Dapper (Zeitsch. f. klin. Med., Vol. 50, Nos. 5 and 6) have found that a moderate restriction of water (up to 3 pints daily) will often influence the body favorably, so that the more energetic withdrawal of fluids will have a more pronounced effect upon the edema later on. The same observation may be made in cardiac cases. The elimination of nitrogenous principles and of phosphoric acid is not interfered with by this procedure unless the water is reduced to 40 ounces or less. Where it is imperative to give such small amounts, the system should be washed out occasionally by more liberal quantities. The amount of albumin in interstitial nephritis usually increases somewhat with deficient fluid, but this is of no account, being only a temporary phenomenon.

Intestinal Syphilis.—A rare case of primary intestinal syphilis of almost certain diagnosis came under the observation of C. Gutmann (Zeitsch. f. klin. Med., Vol. 50, Nos. 5 and 6). An infection was denied and there were no other signs of lues, so that the patient was considered tuberculous. At autopsy, however, the ulcers lacked all the characteristics of tuberculous lesions. They were seated in pairs or larger groups throughout the small intestine, but involved the lower portion of the jejunum more than any other part. There was a marked tendency to spread around the entire circumference of the gut in the form of a ring, with subsequent cicatrization and stenosis. The infiltration was marked and tumor-like, and the base smooth. Microscopically the lesions did not impose as a primary ulceration, but as a cell-infiltration, beginning in the upper layers of the submucosa and followed by necrosis extending into the inner muscular layer. What made the diagnosis almost certain was the presence of endarteritis in the smaller mesenteric vessels. During life the most marked symptoms were uncontrollable, diarrhea, intermittent temperature and rapidly advancing cachexia.

A New Reaction for Sugar.—In some urines which imperfectly reduce Fehling's and Nylander's solutions, and do not ferment or turn the plane of polarized light, it is possible to demonstrate the presence of pentose by means of orcin and hydrochloric acid. M. Bial (Zeitsch. f. klin. Med., Vol. 50, Nos. 5 and 6) finds that glucose and other sugars with six atoms of carbon will also give this reaction if a few drops of sesquichloride of iron solution are added before boiling. If the bluish green precipitate is dissolved in amyl alcohol and then examined with the spectroscope, the bands will, however, be different. This discovery may be of value in distinguishing between glucose and glucosamin, which, both form the same osazone when treated with phenylhydrazine.

Symptoms of Open Ductus Botalli.—The most usual cause of persisting communication between aorta and pulmonary artery is premature birth. Owing to general weakness and insufficient respiratory movements, the sudden change in respiration which is necessary to obliterate the duct, does not take place. There is frequently also a history of some constitutional disease on part of the parents, such as alcoholism. The symptoms often amount to no more than a moderate cyanosis and the prognosis is generally fair. According to A. Bittorf (Münch. med. Woch., Oct. 13, 1903), dulness to the left of the sternum, at the level of the second or third rib, due to dilatation of the pulmonic artery, is almost pathognomonic. Over this area there is often a systolic pulsation with a blowing systolic murmur, and an accentuated second sound. The murmur may also be heard over the apex and is not transmitted into the carotids and the pulse need not show any abnormalities. Frequently there is also an open foramen, but it is generally impossible to diagnose this during life. The Roentgen rays generally establish the diagnosis beyond doubt.

A Fatal Case of Poisoning by Quinine.—The literature of quinine poisoning being very scanty and a fatal case almost unique, the following instance should prove of interest. It is reported by R. H. Quill (Jour. Royal Army Med. Corps, Oct., 1903). The patient swallowed, evidently with suicidal intent, a quantity of sulphate of quinine in solution, amounting to about 240 grains. Within two minutes the symptoms of poisoning came on, beginning with retching and vomiting, which was favored by the prompt administration of an emetic. This was soon followed by almost total unconsciousness, slow and labored respiration, and a barely perceptible pulse, which, under very active stimulation, would return for a time only. A few hours later convulsions affecting mainly the lower extremities came on, and this was soon followed by death. Post-mortem examination showed the blood fluid and very dark in color. The brain was congested and the lateral ventricles were full of serum. The liver, lungs and kidneys were also congested, but otherwise healthy. There was no inflammatory or corrosive appearance of the

mucous membrane. The author believes that if the stomach pump had been efficiently used within a short time after the accident, it is very possible that the fatal issue might have been avoided.

Cordite Eaters.—A recent communication on this subject is published by J. W. Jennings (Jour. Royal Army Med. Corps, Oct., 1903), relating to his experiences in the South African campaign. He observed personally a number of cases where the men ate one or more strands of the cordite, which they took from their cartridges. These strands measure about 1¼ inches in length and $^1/_{25}$ of an inch in thickness. The symptoms are similar to those produced by amyl nitrite, the headache being extremely violent. When taken with beer or tea, cordite produces heavy sleep, followed by stupor lasting from five to ten hours. It is difficult to awaken the patient from this deep sleep and the dulness continues for some time. When taken in solution an immediate exhilarating effect results, inciting almost to demoniacal actions. This lasts for several hours, and is then followed by a deep sleep. The author does not believe that the habit is at all universal in the army, and the symptoms and effects are sufficiently forcible and unpleasant to prevent any but the most depraved resorting to either as a cerebral stimulant or sedative.

The Association of Heart Disease with Tabes.—There are many who do not regard endocardial lesions as of great importance or as a complicating factor when associated with tabes. B. F. Stahl (Am. Med., Nov. 14, 1903) believes that more emphasis should be laid on this condition and that it should command more consideration as regards treatment. Among 24 cases examined at one time, in the Philadelphia Hospital, cardiac lesions were present in 19, and the radial artery was appreciably affected in all but three cases. Only two of the patients had normal heart sounds in all the areas, 10 had accentuation, weakening or blurring of the sounds, and 12 presented clinical evidence of valvular disease. In 19 cases, syphilis was admitted or probable. The author believes that the intimate relationship existing between syphilis and tabes and the pronounced circulatory changes induced by the former, make it reasonable to regard syphilis as the cause of the large percentage of cases of valvular heart disease, which we find associated with tabes.

Thyroiditis as a Complication of Anginæ.—Four cases, in which there appeared to be some direct connection between these two conditions, are reported by W. Lublinski (Berl. klin. Woch., Oct. 12, 1903). They presented the symptoms of a moderate angina, with little rise of temperature. After the latter had almost declined, a sudden rise again occurred on the fifth or sixth day, accompanied by a painful, acute swelling of the thyroid glands. The pressure symptoms were not marked, but there was a considerable acceleration in the pulse rate. The swelling disappeared gradually in from two to eight weeks. In other cases, previously reported, suppuration always took place, and its absence in the author's cases may be explained by assuming that the swelling was of a rheumatic origin. The most relief was afforded by ice applications, followed later on, when the acute process had subsided, by a mild iodine ointment.

"Orthotic Albuminuria."—This term has been applied to that form of cyclical albuminuria which depends on the change of position from the horizontal to the vertical or vice versa. O. Jacobson (Berl. klin. Woch., Oct. 5, 1903) has made a careful study of a number of such cases and has just published the results of his observations. He believes that there is an intimate connection between this form of albuminuria and that associated with the time of puberty, in which a hereditary neurotic tendency plays an important rôle. Almost all the cases he saw were about the age of puberty, presented a pale, flabby appearance, and in a number of instances were markedly neurasthenic. One of the main factors in determining the diagnosis was the fact that albumin was entirely absent in the urine voided during the night. It seems that the albumin invariably appeared after the patient was up, and subjected to a certain degree of fatigue or exertion. He observed, however, that continual standing or slovenly walking was more apt to call forth this symptom than walking undertaken with a certain amount of interest and energy. He explains the sudden appearance and disappearance of the albumin in the urine by assuming that the easily disturbed nerve stability in these patients produces varying changes in the secretory function of the epithelium of the urinary tubules.

Relation of the Status Lymphaticus to Sudden Death.—A valuable addition to the recent literature of this subject is the paper just published by Geo. Blumer (Johns Hopkins Hosp. Bull., Oct., 1903). His views are based on nine cases of sudden death occuring in infancy and childhood, and on the study of the available literature, especial attention being paid to the histology and bacteriology of the condition. He concludes that the status lymphaticus is a definite pathological entity and is probably associated with, if not due to, a condition of intermittent lymphotoxemia. It may be associated with sudden death, probably as a result of lymphotoxemia alone in some cases, or as a result of the action of toxic, physical or psychic injuries, which are rendered much more powerful than usual by the predisposing action of the lymphotoxemia. In some cases the sudden death is undoubtedly mechanical and due to asphyxia from pressure of the enlarged thymus on the trachea.

Cause and Treatment of Various Kidney Conditions.—In a discussion of several clinical features which result from kidney and genito-urinary lesions, W. H. Thomson (Med. Rec., Oct. 17, 1903) has given some very practical hints in regard to therapeutics. He suggests that the high tension pulse of nephritis is due to an agent in the blood, similar to, if not, adrenalin, which causes kidney shrinkage and diminished urea excretion. The effects upon the circulatory apparatus in nephritis are exactly similar in kind to those caused by the intravenous injection of adrenalin. The possibility of the suprarenals being stimulated to increased secretion in cases of chronic nephritis is offered. Besides the increased blood pressure, investigation has shown that the suprarenal extract has a wonderful effect in causing a shrinkage of the kidney itself and naturally a diminution of urea excretion. In the treatment of cases manifesting extreme arterial tension and overacting heart when the ordinary vaso-dilators prove inefficient, as they do so frequently, the tincture of aconite in doses of five minims every three or four hours is often very beneficial, the urea at once being very much increased. He also describes a class of cases among women especially manifesting the symptoms of some nervous disorders and usually diagnosed as neurasthenia or hysteria. No organic lesions are found, but if the urine is carefully examined the excretion of urea will be found to be far below the normal. It is believed that digestive derangements are frequently the cause of this inhibition of urea elimination, just as normally the intake of food stimulates the excretion of urea. They usually feel worse in the morning, and the pulse is of low tension. It is believed that a bi-weekly dose of blue pill alternating with the pulv. glycyrrhizæ Co., and the steady administration of intestinal antiseptics, along with the regulation of the diet will in time relieve them of their multitudinous ner-

vous symptoms, and more surely than the nervines. Among the intestinal antiseptics he has found the best results from ten-grain doses of sodium or ammonium benzoate, with the same of phenol bismuth, or salve, with castor oil in shellac-covered capsules. A case of chronic spermatorrhea in a married man, resisting all methods of treatment ordinarily employed, is described. He had become almost a nervous wreck when a T-bandage was applied and a firm cylindrical pad two inches in diameter and covered with chamois skin was placed against the perineum and held in position by the bandage. The improvement was very marked in this instance, and the same method of treatment is recommended for the annoying cases of too frequent nocturnal emissions.

Treatment for Wryneck.—The etiology of this condition is by no means clear in the majority of cases, but organic causes are sometimes found and require appropriate measures. In the idiopathic cases we frequently express our ignorance by saying that the torticollis is due to irritation of the nuclei of the neurons. L. K. HIRSHBERG (Maryland Med. Jour., Oct., 1903) reports a method of treatment which he has employed in several idiopathic cases with excellent results. The Faradic current was applied daily for five minutes by placing the positive electrode over the wrist and applying a roller negative electrode over the healthy sternomastoid and upper fasciculus of the trapezius on the unaffected side. An internal treatment of two drops of liquor potassii arsenitis was continued three times a day during a considerable period. Improvements in each case began at once, but it required some time before complete recovery was reached.

Fat in Blood and Organs.—Fat is a normal constituent of the blood and organs, even in stillbirths, where no food has been taken into the alimentary canal. According to T. RUMPF (Virchow's Archiv, Vol. 174, No. 1), it is very difficult to determine the normal figures for the blood, since the amount is much larger after a meal than before, and the body possesses no organ which regulates the amount like the liver does for sugar. Diabetic coma does not seem to be accompanied by excessive lipemia, but high figures were obtained in arteriosclerosis and low ones in interstitial nephritis and tuberculosis. The heart and peripheral muscles may contain up to 16 per cent. of the dry residue, the liver 19.6 per cent., but in alcoholism and advanced tuberculosis as much as 56.6 per cent. was obtained. In the kidneys, the fat is increased in congestion and interstitial nephritis; for the spleen and brain no constant figures could be obtained.

Croupous Pneumonia Complicated by Pneumococcic Endo- and Pericarditis.—Pericarditis and endocarditis, complicating pneumonia, are seen so rarely that some of the authors attach no importance to such a complication. In fact, out of a grand total of 5,738 cases of croupous pneumonia, Von Brach hardly found .2 per cent. and .5 per cent. of them complicated by endo- and pericarditis, respectively. There occur undoubtedly some epidemics of pneumonia, in which this complication is more frequent than in others; then pregnancy predisposes to it, as well as preceding valvular disease. The causative factors of cardiac implications are most frequently the Talamon-Fränkel pneumococci, at times also the streptococci, and rarely also other microorganisms. The prognosis, always serious, and frequently fatal, becomes very grave when purulent meningitis supervenes upon the endocarditis. The case reported by SACHATZKY (Roussky Vrach, Oct. 4, 1903) was that of a croupous pneumonia in which, on the third day after a typical crisis, the patient began to have chills followed by a temperature of 40° C. This was accompanied by a gradually increasing weakness and paleness of the skin entirely out of keeping with such a temperature. Examination on the fifth day elicited a much wider area of cardiac dulness than was normal, and the appearance of a peculiar systolic murmur at the apex, and somewhat variable at the base and aorta. To these symptoms there was soon added a distinct friction sound of a pericardial nature. The pulse grew more and more frequent, and from dicrotic became hyperdicrotic. There appeared later on undoubted symptoms of pulmonary infarction, such as cough and mucus tinged with blood, and bronchial breathing, under the fifth and sixth ribs along the right mammary line. Later the urine was found to contain some blood and albumin which led to the suspicion of an infarction in the kidneys. Patient died on the fourteenth day of the disease from cardiac paralysis. The findings at the autopsy substantiated fully the antemortem clinical diagnosis.

A New Gastric Phenomenon in Migraine.—As the result of careful clinical observation, MANGELSDORF (Berl. klin. Woch., Nov. 2, 1903) claims that there is a regular and well-marked increase in the size of the stomach during an attack of migraine or epilepsy. He determined the outline of the stomach by percussion, after inflating the same when necessary, both during and after the attack, and controlled these findings by observations made during the intervals when the patient was well. This dilatation includes all parts of the stomach and subsides after the attack. In the course of time atony of the stomach results, followed later on by a variety of gastric and intestinal disturbances. Among 409 cases afflicted with migraine, only one presented a normal condition of the stomach, as regards this phenomenon, and in this instance the trouble had only been present a short time. Examination of a large number of patients suffering from other nervous or cerebral disorders failed to disclose this symptom, with the exception of those which were the subjects of idiopathic epilepsy. He does not attempt to explain this phenomenon, but notes that in all these cases where special attention was directed to treating the gastric atony, the migraine rapidly improved.

Cause of Milky Ascites.—While studying chylous ascitic fluid, J. JOACHIM (Münch. med. Woch., Nov. 3, 1903) was unable to detect any fat to account for the milkiness. He then subjected the proteid constituents of the fluid to an accurate analysis and found it rich in globulins. By solutions of ammonium sulphate of different saturation, the globulins were separated into euglobulin and pseudoglobulin. From the latter, lecithin could be split off, and it is probable that the loss of transparency is due to this combination.

Alkaptonuria.—In the condition known as alkaptonuria the urine turns brown rapidly when exposed to air and upon the addition of alkalies, while chloride of iron will give a green color and ammoniacal silver, and Fehling's solutions are reduced. It is not difficult, however, to distinguish such urine from diabetic urine, as it does not reduce bismuth nor turn the plane of polarized light, or ferment. The condition is generally congenital, the parents of the patients are often close blood connections, and there seems to be a close relation to that pathological lesion known as ochrinosis, marked by a dark pigmentation of the cartilage, and occasionally of the interna of the aorta and endocardium. L. LANGSTEIN and E. MEYER (Deutsch. Arch. f. klin. Med., Vol. 78, Nos. 1 and 2) find that the acids which occur in the urine are derived from the tyrosin molecule of the ingested albumin, and also from the albumin of the organs, since with proteid-free diet the peculiarities of the urine did not disappear.

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THE BREEDING OF GIANTS.

France, who is nothing if not hysterical, is now laboring under the throes of a severe attack of nervous dyspepsia over the problems of national decay and race suicide. This is merely an exacerbation of the seizure of the last year, when the admitted degeneration of her lower classes was attributed to the deleterious effect of the constant use of adulterated cordials and synthecated aperitifs—which, according to their own statistics, seemed to be filling their jails with degraded criminals and their insane asylums with duly qualified patients. This, however, does not account for the decrease in her birth-rate, which appears to have been due largely to the proverbial ounce of prevention, and which, when associated with what might be called domestic physiology, only goes to show that a little knowledge is a dangerous thing, particularly when it affects a national issue.

The remedies that have been prepared to arrest this increasing degeneration are numerous, and their Chamber of Deputies has been flooded with bills, all of which are frankly ingenious and some of which are gallically unique. Thus one learned legislator, who, though on pleasure bent seems, like John Gilpin, to be possessed of a frugal mind, proposes the offering of prizes for large families, and the remission of taxes to the happy fathers of many sons—the deficit of revenue thus occasioned being made good by an increased levy on the unblessed paterfamilias and lonely bachelors. Another interesting suggestion is that unmarried men shall be ineligible for official positions under the government, or municipalities, while the latest bill introduced, provides that married men and the fathers of children, shall be exempt from military service, and that the French army shall be limited to bachelors only.

All these measures, however, even if they were successful, would only tend to enlarge the number of births, while they would not improve the virility of the nation, or increase the strength of the individual. It is a question of quality rather than quantity, and at the best, the results of such legislation would only serve as an object illustration to the address of Dr. E. Benjamin Andrews, lately delivered to the Delta Epsilon Society, in which he begged President Roosevelt "to take early occasion to amend his plea for swelling the census, by urging quality of population as more of a desideratum." This, however, seems to really be one of the things that they do better in France, for some time since, Count Alfred de Pierrecourt left a legacy of $2,000,000 to his native city of Rouen to pay the expense of the propagation of giants. The will was contested by his heirs, who naturally enough did not see the necessity of having giants on the earth in these days, particularly when they were to be bred, raised, fed and clothed at their personal expense. The courts, however, sustained the will to the extent of endowing the Brobdingnagian experimenters with a quarter of the estate, so that an institution has been established with an income of $500,000, under the supervision of the municipality, for the culture of giants and the production of monstrosities.

The trustees are to search the four corners of the globe for men and women of large stature, and are to pair them off in couples and place them in the homes on a farm near Rouen. Neither race nor language is to be taken into consideration, and the fact that Bridget has never seen Hans has nothing to do with the case. Personal predilection does not enter into the spirit of the scheme, and she is to be torn from her native land with hardly enough of the soil left clinging to the roots to favor the transplantation, provided only that she has the necessary girth to balance the stature of the opposing and unknown party of the second part.

That there are difficulties in the path of the conscientious trustees is apparent. Wild birds will seldom sing in cages, and the production of giants, while you wait, is a new field of industry. Months waxed and moons waned, but Bridget had not laid her lofty head on Hans' towering shoulder while whispering confidential somethings in his vast and ponderous ear, and there were no tidings, as Nestor says, "Of the baby figure of the giant mass of things to come."

France was in despair. The importations were a failure, and Ribot's law of like begetting like, forbade the hope of any successful experiments with the domestic article. At this juncture came the announcement from America—like a sunbeam through the vapor—that one of the professors at the University of Chicago had been fortunate enough to discover the food of which giants are made, and that he had succeeded by its use in doubling the size of white rats. France went mad. The medical societies discussed it, the boulevards rang with its echoes and the journals were full of "M. le bon professeur Americain, Esquire, M.D., de Chicago," who would raise the glory of France until it was "six foot one way and five foot the other, and weighed four hundred pounds."

That their confidence is not misplaced and that their expectations are reasonable seems true. If the "professor" has done this to the rats, what could he not accomplish with a lot of French sansculottes, if their bones are as yielding as the conscience of Gaston, and their skin as flaccid and lax as the morals of Alphonse?

As to the discoverer of this food, his path lies open, free and fair for him to France. Americans are already large enough, and it is a pity to waste this "raising powder" on rats—be they white or gray. *A bon chat, bon rat,* and we have "foods" in plenty. Foods for babes, "foods for brain workers," foods for every sort and condition of men, and for each individual function that dwells therein.

"To-day no credit comes to you
For being noble, wise or great.
The advertisers say it's due
Entirely to the 'foods' you ate."

JEAN ASTRUC, A FORGOTTEN MEDICAL WORTHY.

It is probably the fortune of very few medical men to acquire enduring fame, and yet to be forgotten in their own profession. But such has been the fate of Jean Astruc. The name of Astruc is indelibly associated with the history of the higher criticism of the Hebrew scriptures, while his medical writings, which brought him much contemporary fame, are buried in our medical libraries among the forgotten tomes of the eighteenth century. The subject should not be without interest in the present age, which shows a growing curiosity to resurrect the names of the medical worthies of the well-nigh forgotten past.

Astruc was a French physician of great learning at a time when physicians were still renowned for their wide acquaintance with letters. He was born in 1684, studied at the University of Montpellier, and eventually held chairs successively at Toulouse, Montpellier and Paris. His teaching attracted many students, and his writings were voluminous. His chief work was *De Morbis Venereis libri sex*—a work which was translated into English and enjoyed a great vogue. He also wrote on obstetrical and medical subjects, and died at the advanced age of eighty-two years, after a life devoted to letters and to medical science.

All this would not, however, have preserved the name of Astruc, and it is one of the curiosities of literature that this learned physician owes his place in the realm of letters not to the labored treatises which he contributed to medical science, but to a small monograph which had no relation to medicine, and which its author probably regarded as among his least important works. This inconspicuous book was entitled *Conjectures sur les memoires qui ont servi â Moise pour écrire la Genése*—a book of which it may be said that it was pregnant with an idea of almost unsurpassed importance in modern literary criticism.

In this epoch-making book the author pointed out the fact that the cosmogony in the first two chapters of the book of Genesis was in two distinct accounts, written by different authors, and that the author of the first account (Gen. 1—1 to 11—3) always uses the Hebrew word *Elohim* for the deity, while the author of the second account (Gen. 11—4 to 11—25), always uses the word *Jahveh.* This hint or suggestion of such seemingly little importance, was subsequently recognized as the key to unraveling the composition of the earlier Hebrew scriptures, and has been adopted by all subsequent scientific critics in that most fruitful analysis, which is known as the Higher Criticism. Astruc had detected, in other words, the criteria by which the separate records of the *Elohist* and the *Jehovist* could in a large measure be recognized. The learned German scholar, Wellhausen, has said of Astruc that

he had the merit of opening the true path of this investigation of the Hebrew scriptures.

While this subject of Biblical criticism is in one sense outside the limits of medical science, it is, in another sense, of interest to all physicians who care to keep informed about the methods of science as applied to the unraveling of old documents which have had such a stupendous influence in opposing a true scientific conception of the universe. Moreover, the fact that one of the pioneers in this research—and one who contributed the most fruitful method—was a member of the medical profession, makes this interest all the more natural and inevitable. Astruc builded better than he knew when he turned from studying venereal diseases to study the composition of the book of Genesis. It is indeed a strange thought that this accomplished French physician of the old régime should have contributed, out of the fulness and wideness of his literary wealth, a small book in Hebrew criticism which will probably keep his memory green long after his venereal writings are forgotten.

ECHOES AND NEWS.

NEW YORK.

Plans for New Willard Parker Building.—Plans have been filed with the Department of Buildings, Manhattan, for a new six-story and basement laboratory and dormitory at Sixteenth street, east of Avenue C, for the use of the proposed new Willard Parker Hospital. The fifth floor will contain a library, and two floors are to be devoted to dormitories. The building will have a façade of ornamental brick, and is estimated to cost $100,000.

New Hospital for Staten Island.—St. Vincent's Hospital, a branch of St. Vincent's Hospital in Manhattan, located at the corner of Bard and Castleton avenues, West New Brighton, S. I., was formally opened on Friday last. Judge Albert Reynaud, in the address of the evening, said the Sisters in charge will not consider either creed, nationality or condition. The first ambulance service Staten Island ever had will be maintained. The hospital contains forty-one rooms, and accommodates about 200 patients. Sister Clement Marie, who had been attached for forty-nine years to the main hospital in Manhattan, will be in charge of the Staten Island branch. The property around the hospital, 257 city lots, was bought for $35.000.

Endowed Beds for Post-Graduate Hospital.—New York Lodge No. 1, Benevolent and Protective Order of Elks, is about to endow in perpetuity, at an expense of $15,000, two beds in the Post-Graduate Hospital, at Second avenue and Twentieth street. The hospital agrees to place the beds in a private room, to give the lodge the right to say who shall occupy them, and also to give these patients verything they need without additional expense. The money is to be paid in installments within a period of eighteen months. There has been subscribed already $4,700. There are only 1,300 members in the lodge, which in the last thirty-five years has given $220,000 to relieve sickness and distress.

Stamping Out Consumption.—The Charity Organization Society Committee on the Prevention of Tuberculosis is again circulating an appeal for funds to be used in checking the ravages of consumption in this city. Among the special needs which will have to be supplied, chiefly by private initiative, the Committte places emphasis on the following: Private sanatoria should be provided for patients who can afford to pay a moderate amount, and they should also be endowed sufficiently to provide for absolutely free treatment in exceptional cases. Relief funds should be supplied for the relief of indigent consumptives in their own homes until sanatorium or hospital accommodations are provided, and for patients who, on competent medical advice, can safely and with advantage to themselves and their neighbors, be treated at home. There are some instances in which the payment of board in private families outside the city is advisable, and relief funds should be provided for this purpose, especially in the interval pending the enlargement of sanatorium and hospital accommodations. Special dispensaries or clinics for the treatment of patients living at home are desirable. The presence of persons suffering from various forms of tuberculosis in general dispensaries is objectionable in the interests both of themselves and of other patients. Seaside sanatoria for scrofulous and tuberculous children are also needed, to which teachers should be attached, so that the intellectual development of the children need not suffer. An agricultural colony is desirable, where cured patients discharged from the sanatoria may find outdoor employment for a time. The education of the public in the means of prevention, and in those facts concerning the cure and treatment of the disease which are of interest and of value to the general public, is one of the essentials to the stamping out of the disease.

The New Medical Inspector of Hospitals and Retreats for the Insane and His Duties.—The New York State Commission in Lunacy had the following law passed at the last session of the Legislature: "The commission in lunacy may also appoint a medical inspector, who shall be a well-educated physician, a graduate of an incorporated medical college, and who shall have had actual experience in an institution for the care and treatment of the insane. Such inspector shall receive an annual salary of $3.500 and all his actual and necessary traveling expenses incurred by him in the performance of his duties, which shall be audited and paid in the same manner as the other expenses of the commission. He shall, subject to the direction of the commission, visit and inspect the several State hospitals and other institutions for the insane which are subject to the supervision, visitation and inspection of the commission. He shall, subject to the direction of the commission, make an examination, so far as circumstances may permit, of the patients confined in such hospitals and institutions, especially those admitted thereto since his preceding visit, giving such as may request it suitable opportunity to converse with him apart from the officers and attendants. He shall perform such other duties as may be prescribed and directed by the commission."

In accordance with this law, Dr. W. L. Russell, first assistant physician at the Willard State Hospital, was selected from a list furnished by the Civil Service Commission of physicians eligible to be superintendents of State hospitals, and on October 1 duly appointed medical inspector.

The character of his duties will be seen from the following outline which has been sent to the twenty-five licensed retreats for the insane in the State: The Medical Inspector shall make visits to the licensed private retreats for the insane at least once in two months, and oftener when deemed advisable by the Commission.

The scope of his inspection and report will include the following points:

Name of retreat.

Licensed for how many patients?

Number of patients—male voluntary, female committed. Total.

Number and names of physicians.

Number and names of ordinary attendants.

Number and names of trained attendants, with name of school of graduation in each case.

Note general appearance of attendants as to dress, conduct and apparent qualifications.

Number of servants.

He shall see all the patients present, both voluntary and committed, reporting to the Commission the names of any requiring special attention.

He shall write in his report the names of patients admitted since the last visit and the diagnosis.

Inquire into the method of treatment of acute cases, and the facilities for the treatment of maniacal excitement in acute and chronic cases.

Ascertain character of restraint used, if any. Reasons for use of restraint. All restraint apparatus on the premises to be exhibited to the Inspector, who will make a list of the same.

Is seclusion used? Number and names of patients found in seclusion.

Reasons for seclusion.

Classification of patients. Are sexes sufficiently separated?

Ascertain the adequacy of fire protection and fire-escapes.

The Inspector should visit all parts of the premises, all rooms, wards, closets, attics, basements, kitchens, stables and outhouses, and report on the general condition of buildings, furnishings and grounds.

Examine into sanitary conditions: Water supply, sewage disposal, number of bath-rooms and frequency of bathing patients, number of water closets, cleanliness, ventilation and lighting of toilet rooms, condition of clothes rooms, condition of mattresses, pillows and bed linen, hydrotherapeutic apparatus.

Examine medical certificates, histories and registries of admissions, transfers, discharges and deaths. Read commissioners' book and note whether suggestions made therein have been carried out. Ascertain whether any scientific work is done, such as methodical examination of blood, urine, etc., and number of autopsies performed. Report on dietary, amusements and occupation of patients. Make a minute of new construction in improvements contemplated. Enter in commissioners' book a minute of the condition of the house and patients. His inspection of the fourteen State hospitals includes features similar to those noted above for the private institutions. The work of the Medical Inspector supplements the work of the lunacy commissioners, but does not in any way diminish their duties. They are still required to make their usual semi-annual visit to the hospitals, both private and public. The more frequent inspections by Dr. Russell will keep the Commission constantly in touch with the institutions under its charge, accelerate attention to repairs and betterments and tend to the better safe-guarding and welfare of the patients.

PHILADELPHIA.

Hospital Damaged by Fire.—A recent fire in the out-patient department of the Children's Homeopathic Hospital, Franklin and Thompson streets, damaged the building to the extent of $4,000. It threatened for a time to ignite the main structure and caused the removal to other wards of 25 children.

German Hospital Donations.—At the annual donation day of the German Hospital held on Thanksgiving Day, 5,000 patrons visited the wards. The donations aggregated $9,000 in cash and $2,500 in merchandise.

New Methods of Disinfection.—Measures to remove some of the objections to the present methods of disinfection and fumigation of smallpox premises have been provided for by Councils and will be put in force in a few weeks. Temporary buildings for the disinfection of persons found in houses with smallpox patients will be erected outside of the Municipal Hospital grounds, this doing away with the necessity of taking such people within the hospital enclosure. In those instances where facilities for such baths are contained in the houses, tablets of disinfecting materials will be supplied and the well persons allowed to take their baths in the house, going immediately to those parts which have been disinfected. This is, of course, possible only in large houses. Instead of taking clothing and bedding to the hospital for disinfection, two large portable disinfecting wagons are to be constructed. They will be taken to the doors of the infected house, the goods placed in them and disinfection accomplished by means of live steam and formaldehyde.

Report of State Board of Health.—An important feature of the meeting of the State Board of Health held at Pittsburg, November 27, was the annual report of the Secretary, Dr. Benjamin Lee. The larger part was devoted to the consideration of smallpox, of which there was during the year, in Pennsylvania, 6,504 cases and 503 deaths. The largest number occurred in Pittsburg, where there were 1,234 cases and 238 deaths. Dr. Lee directed particular attention to the inefficiency of maintaining ordinary hygienic conditions and personal cleanliness alone as a preventive of smallpox. The Board early in the present epidemic often received urgent appeals from physicians who feared the results if smallpox appeared among crowded settlements of ignorant foreigners, who live in filthy surroundings. It was found, however, that the disease did not spread among these foreigners, but among the enlightened Americans who were not vaccinated. Dr. Lee said that the prominent establishments in Pennsylvania for the manufacture of vaccine virus had been highly commended by the examining officials of the United States Public Health and Marine Hospital Service.

Epidemic of Typhoid Fever in Butler.—An extensive typhoid epidemic is at present prevailing in Butler, Pennsylvania. More than 1,500 cases out of a population of less than 13,000 have occurred and 30 deaths have occurred up to the time of writing this letter. The source of infection has been found to be in the water supply of the city. Heavy rains had destroyed the new reservoir and an old one had been used. Finally the filtration plant broke down and water was taken directly from the creek. Soon after this typhoid appeared. Four of the physicians of the city are down with the disease. Appeals for aid have been made to nearby towns and, unofficially, to Philadelphia. Dr. F. C. Johnson, assistant chief resident physician at the Philadelphia Hospital, was sent by Director Martin to Butler to determine the

conditions there and decide whether relief should be sent from this city. An extraordinary meeting of the State Board of Health was held in Butler immediately after their meeting in Pittsburg. Secretary Lee says that the epidemic is the result of the failure of physicians to make weeky reports of contagious diseases. The disease had been in progress for some time before the health authorities were cognizant of its extent.

Smallpox Continues to Increase.—Smallpox is rapidly taking on the proportions of an epidemic in this city. For the week ending November 28 the new cases numbered 70, and for the 48 hours following they numbered 40. The largest number of the cases are located in the sections north of Market street and west of the Schuylkill. The spread continues in spite of the extra precautions that have been taken during the month of November. Double quarantine, front and back, has been placed upon houses containing the disease and the interior subjected to several fumigations before removing quarantine. Upward of 300 cases are now under treatment at the Municipal Hospital, additional nurses and attendants being made necessary. The sixth case among the colored religious fanatics who refused vaccination occurred November 30.

The Control of Contagious Diseases.—The meeting of the Philadelphia County Medical Society, November 25, was devoted entirely to a consideration of the report of a committee appointed to suggest methods for the control of contagious diseases by the Municipal authorities. The report was presented by Dr. Alfred Stengel who stated that the committee had prepared it after investigations of the methods in New York, Boston, Baltimore, St. Louis and Chicago. Among the recommendations was one making the reporting of contagious diseases the duty of the household in which they occur. This should be done on postal cards furnished by the Board of Health and distributed by physicians. Physicians would still be required to report all notifiable diseases as heretofore. Among the new diseases to be placed on the notifiable list were mentioned measles, German measles, plague, anthrax, glanders, rabies, and tetanus. They suggested that physicians instead of householders should report cases of laryngeal and pulmonary tuberculosis. Another suggestion was that quarantine of cases of diphtheria should be removed after a period of two weeks from the time of clinical recovery without making cultures from the throat. This method might occasionally allow the escape of a contagious case, but if negative cultures are depended upon the quarantine law will often be evaded and the hardship of detention be enforced upon many people who are not capable of spreading the disease. The discussion of the report brought out many diverse opinions regarding the recommendations. Dr. A. C. Abbott raised the question of placarding houses, stating that the practice was an annoyance and was not of great service in keeping people away from such houses. Perhaps smallpox and plague placarding might be allowable, but there are perhaps better ways of managing even them. He would recommend a special corps of sanitary police for enforcing quarantine. Dr. Abbott thinks it is a mistake to recommend the clinical instead of a bacteriological test for the raising of quarantine of diphtheria patients. After a long and spirited discussion the report was referred back to the committee for revision. Director Martin stated that it was the desire of the Health Department to obtain opinions from the County Medical Society and the College of Physicians regarding the best methods of handling contagious diseases. When these were obtained the Department would try to enforce the recommendations as being those that were practicable. He stated that it was easy for executive departments to institute a set of regulations that were theoretically ideal and yet impossible to actually carry out. Hence he wishes the united opinion of the profession as to methods that can be carried out even though they be theoretically imperfect. When the physicians of the city unite on certain definite plans the department is ready to assist in putting them into action.

Medical Inspection of Schools in Philadelphia.—In June, 1898, a committee of the Public Education Association brought to the attention of the Board of Health the control obtained over contagious diseases in other cities by a careful inspection of what have proved to be the centers for the spread of contagion, the public schools. A resolution was passed on June 7, 1898, by the Board of Health, directing the 15 Assistant Medical Inspectors to visit one public school each day in their respective districts. This inspection commenced on June 16, and during the following winter, from October, 1898, to February, 1899, a period of 13 school weeks, a large number of contagious cases were found in the schools by the Inspectors. The John Bartram School, Mt. Moriah Lane and Greenway avenue, Fortieth Ward, furnished a test case for the system. In September, 1898, it was threatened with an epidemic of diphtheria. Of 13 cases in the ward, 11 had been attending that school. Investigation by the Board of Health showed that children from a certain house had been attending the school with "sore throats." The family being Christian Scientists, no physician had been called. Examination proved them to be suffering from diphtheria. An investigation of the absent list of the school developed 2 other cases of diphtheria. The school was at once fumigated, and daily visits of the Medical Inspector placed the school under surveillance until the disease had disappeared. In December, 1899, this Association went before Councils with a plea that the Health Board should be given funds to extend the inspections to all schools, both public and parochial, and should be given a corps of Medical Inspectors large enough to permit of daily visits to all of the 325 buildings of the public schools, as well as the 28 of the parochial schools. But almost immediately thereafter, the Board of Public Education devised and instituted a volunteer service under its own control. This service lasted from January 1 to November 1, 1900. It was incomplete and imperfect because unorganized and unpaid: yet there were discovered a total of 5,876 cases of illness of which 3,446 were contagious cases and 2,430 non-contagious. In addition, there were many non-contagious cases that were not reported, and many children who were excluded from school without report of their cases. Among these the reports emphasized 12 cases of well-developed diphtheria, 4 of scarlet fever, 112 of measles, 115 of mumps and 212 of lice; 1,001 cases of badly defective eyesight were reported in addition to 397 cases of contagious eye diseases. In our own city the past inspections have made an impression on parents, teachers, Sectional Boards and the Board of Public Education. The Department of Health and Charities is now anxious to increase its force of Assistant Medical Inspectors to a number that will permit them to include in the daily duties visits to the schools, which are the centers of the spread of contagious diseases. This meeting is intended to endorse and assist the Department in obtaining public recognition for its desire that the city practise the economy of the ounce of prevention, daily medical inspection of school children, rather than the pound of cure, which means a

full contagious hospital, schools closed for disinfection, sick children, and the work of the schools interrupted. The value of human life saved, to say nothing of the suffering, bereavements and diseases prevented, infinitely outweighs the comparatively trifling cost of a few additional Medical Inspectors.

Obituary.—Dr. William Shaw Stewart, one of the founders and ex-dean of the Medico-Chirurgical College, died suddenly of heart failure at his home, 1725 Pine street, November 25. Dr. Stewart was sixty-five years of age and had long been identified with the growth of medical science in Philadelphia. He graduated from Jefferson in 1860. He served throughout the Civil War as assistant surgeon. Dr. Stewart was instrumental in founding the Medico-Chirurgical College and for ten years was its Dean, being professor of obstetrics and clinical gynecology. He was professor emeritus at the time of his death.

CHICAGO.

Improved Milk Supply.—An improvement shown in the reduction of samples of milk below grade from 45 in every one hundred collected in 1893 to less than 8 in the hundred at the present time, is to be credited with a large share of the saving of children's lives between one and five years, the milk feeding period.

The relationship of the milk supply to infectious diseases of children is very intimate and work carried out by the Health Board of New York City in co-operation with the Rockefeller Institute is worthy of emulation and of the adoption of similar methods for the investigation of the conditions in Chicago.

Infectious Diseases.—Acute infectious diseases are fewest, but influenza shows signs of increased activity. Total deaths for the week were 467.

Appointment of Dr. Ruediger.—Dr. E. H. Ruediger of the Memorial Institute for Infectious Diseases, Chicago, has been appointed assistant in the Serum Institute, Manila, P. I.

Probert Fine.—It will be remembered by the readers of the MEDICAL NEWS that Arthur C. Probert, Vice-President of the Christian Hospital, was arrested on the complaint of Dr. J. B. Murphy and others on the ground that their names were being used without authority, on certificates of the hospital to induce other physicians to become members of the staff on payment of fees of varying amount, and was fined last week $500 and costs for the fraudulent use of the mails.

Salpingoscopy.—Dr. Joseph C. Beck read a paper on this subject before a recent meeting of the Chicago Laryngological and Climatological Association. This is a term given by Valentine to the method of examination of the ostium of the Eustachian tube and the nasopharynx by means of his salpingoscope, which is nothing more nor less than a small cystoscope. Hirschmann claims the priority of this instrument, and calls it the endoscope, for the purpose of examination of the nose, especially the ostia of the accessory sinuses. The various conditions the essayist uses this intrument for examining are as follows: (1) Acute salpingitis following and associated with an acute rhinitis, where the patient complains of a fulness in his ear; (2) acute rhinitis without the symptom of fullness in the ears, including hay fever; (3) acute otitis media non-suppurativa; (4) acute otitis media suppurativa; (5) chronic otitis media non-suppurativa; (6) chronic otitis media suppurativa; (7) in cases where he cannot place properly the Eustachian catheter or inflate with satisfaction; (8) in the use of a bougie; (9) adenoids; (10) chronic postnasal catarrh; (11) marked hypertrophies of the posterior ends of the inferior and middle turbinated bodies; (12) atrophic rhinitis; (13) examination of the ostium maxillaris in sinus disease, where the anterior half of the middle turbinated body had previously been removed; (14) the roof of the nose in the same conditions; (15) antrum of Highmore through the opening of the jaw; (16) the act of swallowing and speaking in the healthy subject and in one with paralysis of the soft palate; (17) tuberculous and syphilitic laryngitis, etc. The larynx may be examined by means of this instrument, being situated in the nose, the prism turned downward, and while the patient is instructed to breathe freely through the nose, one can see clearly the chink and sometimes the vocal cords. Again, it may be used in the mouth, as Valentine and others have used it, particularly in young individuals, and get a much larger and clearer image of the larynx. The author's conclusions are: (*a*) That it is an aid in diagnosis; (*b*) it is absolutely necessary to familiarize oneself with the technic and learn the comparative sizes of the structures; (*c*) its use is principally of value in the nasopharynx in examination of the ostium tuba.

Spastic Dysphonia.—Dr. John Edwin Rhodes contributed a short paper with this title. This term is applicable to any neurosis of the larynx which is characterized by difficulty in phonation. It is, so far as the larynx is concerned, a local condition rather than a disease, the lesion for which it is a symptom being one of the nervous system, and usually situated in the brain. It is a neurosis in which there is a spasm of the larynx, and a failure to properly coordinate its muscular action on attempts at phonation. In these cases on an inspection of the larynx a normal condition is found so far as appearances are concerned, while the respiratory function alone is taking place. However, as soon as the impulse to the muscles of phonation is sent along the efferent nerves there is an immediate spasmodic action of the larynx apparent, the voice being broken in a characteristic manner, but as soon as the attempt ceases the normal action of the larynx in phonation is resumed. The affection is rare, as MacKenzie has seen but 13 cases, although Lennox Brown believes that it is found more frequently, a statement with which most observers do not agree. The patient was a farmer, forty-two years of age, and gave the following history: His speech had been affected for twenty-three years, but had become worse in the last five years. Early in the history of the trouble there was an almost total loss of speech. The trouble seemed to begin rather suddenly as a cold, with loss of voice. As this was not restored after a time, he and his friends became alarmed. His family history shows the death of his mother from paralysis following typhoid fever at seventy-three years of age. Patient is of a nervous temperament, and has had several nervous breakdowns in the last few years. He is inclined to be morbid and constantly worries over his condition. There is a considerable loss of weight; from 140 pounds a few years ago and 125 pounds two years ago, his weight has declined to 119 pounds. He is rather anemic, having a pale, sallow complexion. His pulse is 72, and slightly unsteady. His temperature is a part of the time above normal, reaching 100.2° F. There is no cough, but some hacking and clearing of the throat. The appetite is good, but digestion is poor, and he complains of a miserable feeling in the bowels constantly. He is habitually constipated, and a constant user of cathartics. On attempts at phonation there is at

once a marked tremulousness of the voice. The words are broken and vibratory, more so at the very beginning of efforts to speak than when he has gotten well started; then the words are uttered more easily, some words having an even, clear tone, but most of them characterized by tremulousness; such use of the voice causes fatigue. When he is excited or a little embarrassed or tired, the trouble is more marked. The whisper voice is perfectly normal, and he can use it without fatigue for any length of time. There has never been any dyspnea. He has had nasal catarrh since childhood. The patient denies having had syphilis. There are a few enlarged follicles on the pharynx and some diseased crypts in the tonsils. The laryngeal structures show no evidences of inflammation. On attempts at phonation, the abduction is not delayed, but on the attempt at verbal utterance, the tremulousness of the cords is at once apparent. Tension is held for an instant only, when there seems to be a relaxation, allowing a fuller column of air to pass, throwing the vocal cords into vibration in their entire length. The arytenoids seemed fixed with no relaxation while this condition of tremulousness is observed. In the utterance of a single and prolonged note, there seems to be an uneven escape of the air column, an intermitting tension and relaxation. This condition is not apparent when he whispers. There are no evidences of this tremulousness elsewhere. There is none of it about the head, neck, or extremities, and it is not in evidence except when speaking. The reflexes are normal.

Skiagraphic Fallacies.—Dr. John A. Robison read a paper on this subject. He pointed out that the development of skiagraphic plates is more difficult than that of the ordinary plates. One must eliminate all sources of error intrinsic in the plate, the developing fluid, and the manipulation of the X-ray apparatus. He found quite a number of plates would develop more rapidly in certain spots than others. In one instance he was shown a plate where a dark spot over the region of the left kidney had been pronounced to be a renal calculus. He took two skiagraphs of this patient, and was unable to find the shadow. He persuaded the patient to secure another skiagraph from the first operator, who subsequently acknowledged he did not obtain the same result in his second plate. He has seen skiagraphs of lungs where the light areas seemed to prove the presence of pulmonary cavities, which light areas did not exist in subsequent plates. In the development of skiagraphs one has not the contrast of light and shadow, as in ordinary photography. The entire plate in the developing fluid speedily becomes dark, and it is easy to overdevelop the plate and obliterate the contrast between the lights and shadows. It is to secure the proper contrasts that experience in the exposure of the patient to the X-ray becomes necessary. It is only possible to secure good results by experience, and in medical skiagraphy the interpretation of the results can only be truthfully made by a physician, no layman having the necessary pathological knowledge to enable him to interpret the shadows cast by various pathological conditions. But granted that the technic has been perfect, errors may ensue from the wrong interpretation of the skiagraph. Two cases were narrated in point.

GENERAL.

Cause of Typhoid Fever at Williams College.—It has been determined by the authorities at Williams College, Mass., that the source of typhoid which recently developed among the students, and at one time threatened to become a serious epidemic, was a can of milk. The theory is that the milk was cooled in impure water, and that a little of the infected water accidentally got into the milk. The can in question did not come from a Williamstown dealer, but was brought from outside the town.

Cuba's Death Rate.—Statistics printed last week show that during 1902 the death rate in Havana was 21.9 per 1,000. There were 6,279 births and 5,832 deaths. The greatest number of deaths, 885, were from tuberculosis. There were 176 deaths from cancer and 469 from enteritis.

William Peirson Medical Association.—The following named physicians have been re-elected officers of the William Peirson Medical Association of Essex County, N. J., for the ensuing year. President, Thomas W. Harvey, M.D., Orange; First Vice-President, Richard C. Newton, M.D., Montclair; Second Vice-President, Joseph C. Young, Newark, N. J.; Treasurer, J. Hammond Bradshaw, M.D., Orange; Secretary, Richard D. Freeman, M.D., South Orange; Librarian, Henry A. Pulsford, M.D., South Orange; Council, the above named and Theron Y. Sutphen, M.D., Newark; Mefford Runyon, South Orange, and William B. Graves, East Orange.

Mississippi Valley Medical Association.—The thirtieth annual meeting of the Mississippi Valley Medical Association, will be held at Cincinnati, O., October 11, 12, 13, 1904. Dr. B. Merrill Ricketts has been elected Chairman of the Committee of Arrangements. The following are the officers of the Association elected at Memphis: President, Edwin Walker, M.D., Evansville, Ind.; President-elect, Hugh T. Patrick, M.D., Chicago, Ill.; First Vice-President, Bransford Lewis, M.D., St. Louis, Mo.; Second Vice-President, Geo. W. Cale, Jr., M.D., Springfield, Mo.; Secretary, Henry Enos Tuley, M.D., Louisville, Ky.; Assistant Secretary, S. C. Stanton, M.D., Chicago, Ill.; Treasurer, Thos. Hunt Stucky, M.D., Louisville, Ky.

The following resolution was offered by Dr. S. P. Collings, of Hot Springs, Ark., at the Memphis meeting.

Whereas, The value of perfect sight and hearing is not fully appreciated by educators, and neglect of the delicate organs of vision and hearing often leads to disease of these structures, therefore, be it

Resolved, That it is the sense of the Mississippi Valley Medical Association that measures be taken by Boards of Health, Boards of Education and School authorities, and where possible, legislation secured, looking to the examination of the eyes of all school children, that disease in its incipiency may be discovered and corrected.

The Government Hospital at Luzon.—According to the report of an officer serving in the Philippines, the hospital maintained there by the Government is in a flourishing and highly satisfactory condition. For three hundred years the Spaniards got no further than the recommendation for establishing a health station in the mountains of Benguet, which amounted to nothing more material than an indifferent discussion as to its site; but in 1902, shortly after the establishment of the Taft régime in the Archipelago a Civil Service Sanitarium was set up at Bagnio in the hilly region of Luzon. One of the difficulties, perhaps the chief difficulty, in starting an institution of this sort in the tropics is the matter of choosing a suitable location. In the lowlands one must always contend with the scorching days, sultry nights and pestiferous insects; while the highlands are often very little better and quite inaccessible. The latter condition is present in this attempt in some slight degree, but the hospital can be reached in something less than three days on horseback, a short journey as traveling goes in the Islands. A plateau three miles in circumference and lying 4,700

feet above sea level has been carefully laid out by a landscape gardener and on it the more permanent structures are to be erected. A natural advantage and one of very great importance is the soil of porous clay, while spring water of excellent quality can be readily obtained from the limestone hills. In 1902 a small pine house with a glass roof served to accommodate 8 or 10 patients, and in 1903 this was enlarged to provide for 50, with 5 cottages for special cases. Present appropriations allow for 20 new rooms and 7 new cottages. The Sanitarium is used also as a sort of hotel for those who wish to come up out of the heat and fatigue for a few days' rest. The daily temperature is 63° to 68° F., the nights are cool and blankets are required for sleeping. One dollar per day is charged to those who can afford it, while the more affluent can pay as much as $3.50 for subsistence and attendance.

Obituary.—Dr. Hawkins Brown, aged seventy-three, died at his home in Hustonville, Ky., of paralysis of the heart last Tuesday. He was an ex-President of the Kentucky State Medical Society, a surgeon of the First Kentucky Cavalry, and a medical officer of Gen. Stoneman's staff during the Civil War.

CORRESPONDENCE.

AMERICAN AND INTERNATIONAL CONGRESSES ON TUBERCULOSIS AND TUBERCULOSIS EXHIBITS FOR THE YEARS 1904 AND 1905.

To the Editor of the MEDICAL NEWS:

DEAR SIR: During the past few months I have been the recipient of a large number of inquiries concerning the various tuberculosis congresses (American and International) which have been projected for the years 1904 and 1905. The multiplicity of these various congresses and the similarity of their names leads naturally to great confusion. It would be really too great a task to undertake to answer in full and individually all the letters with which I have been honored. I therefore ask you to grant me the space to give the desired information in your esteemed paper, so that all the readers of the MEDICAL NEWS, who may be interested, will have a clear idea of the various congresses, their officers, and time and place of meeting.

It is announced that a congress on tuberculosis is to be held in St. Louis on October 3, 4 and 5, 1904, under the name of International Congress on Tuberculosis. Upon careful inquiries I learned the following facts about this congress: Mr. Francis, the President of the St. Louis Exhibition, has been approached by the officers of the American Congress on Tuberculosis, which was founded some years ago by Clark Bell, Esq., a lawyer of the City of New York, to sanction the holding of an international congress on tuberculosis in connection with the Louisiana Purchase Exposition. From a letter received from Dr. E. J. Barrick, of Toronto, Canada, the now President of this American Congress, I learn that Mr. Francis has appointed the above-mentioned Mr. Clark Bell Chairman of the Committee on Organization. Mr. Clark Bell is also the Treasurer and Chairman of the Executive Committee of the American Congress on Tuberculosis, season 1903-1904; a Mr. Samuel Bell Thomas, of 290 Broadway, New York, is the Secretary of the latter. The officers of the International Congress are not yet elected. I was desirous to learn the names of other medical men interested in this congress, and Dr. Barrick very kindly wrote me on Nov. 16 that he had asked Mr. Bell to furnish me the desired additional information, but nothing has thus far been received.

The other international tuberculosis congress announced is the one to meet in Washington, D. C., April 4, 5 and 6, 1905. It is to be held under the auspices of The American Congress on Tuberculosis for the Prevention of Consumption. The following is a list of the officers of this latter organization:

Honorary President, Dr. Henry D. Holton, Brattleboro, Vt.

Member, Executive Council, Dr. Chas. O. Probst, Columbus, O.

President, Dr. Daniel Lewis, New York.

1st Vice-Pres., Dr. E. A. Egan, Springfield, Ill.

2d Vice-Pres., Dr. Frank Paschal, San Antonio, Tex.

4th Vice-Pres., Dr. Irving A. Watson, Concord, N. H.

5th Vice-Pres., Dr. Chas. Wood Fassett, St. Joseph, Mo.

Secretary, Dr. George Brown, Atlanta, Ga.

Treasurer, Dr. P. H. Bryce, Toronto, Canada.

Before going further, I would like to call the attention of the readers to the difference in name of the two American congresses. The one is American Congress on Tuberculosis, the other The American Congress on Tuberculosis for the Prevention of Consumption.

The congress which was to meet under the name of Congres International de la Tuberculose at Paris from Sept. 26 to Oct. 1, 1904, has been recently postponed to the year 1905. The President of this Congress is Professor Brouardel, Hon. Dean of the Faculty of Medicine of Paris. The General Secretary is Dr. M. Letulle, Prof. agrege of the Faculty of Medicine, residing at 7 rue Magdebourg, Paris. This Congress will be divided in two sections, the medical and the social:

I. In the medical section the following subjects will be discussed: (1) New methods for the treatment of lupus; (2) new methods for the early diagnosis of tuberculosis; (3) comparative studies on the different forms of tuberculosis.

II. In the social section: (1) Etiological factors in tuberculosis; (2) value of different means for the treatment of tuberculosis; (3) the voluntary insurance and the mutual societies in the combat of tuberculosis.

The Congress will furthermore form a technical section under the name of Museum of the Congress.

There will be held during the coming year independently of the above mentioned congresses two tuberculosis exhibitions, one in Baltimore, Md., and the other in St. Louis, Mo. The Baltimore Tuberculosis Exhibition will be held in January, 1904, under the combined auspices of the Tuberculosis Commission, the State Board of Health, and the Maryland Public Health Association. Details are in charge of Dr. W. S. Thayer, president of the Commission; Mr. John M. Glenn, secretary; Dr. John S. Fulton, secretary of the State Board of Health, and Dr. Marshall L. Price. Dr. Henry B. Jacobs has been elected Chairman, and 250 prominent professional men and laymen have been asked to act as an advisory committee. A series of lectures will be given, the object of which will be to present the extent and effects of the disease in a striking manner. The pathological, hygienic, sanatorium and sociological aspects of the tuberculosis problem will be practically demonstrated by specimens, charts, literature, instruments, photographs and plans. All communications concerning the exhibition should be addressed to Dr. Marshall Langton Price, 10 South Street, Baltimore, Md.

The other tuberculosis exhibition will be held in St. Louis, in connection with the exhibition of Social Economy and under the Subsection of Hygiene, of which Dr. J. N. Hurty, of Indianapolis, is Superintendent. To avoid multiplicity of exhibits, Dr. Hurty has put himself in communication with the General Secretary of the International Bureau for the Prevention of Consumption at Berlin, Professor Pannwitz, so

that the exhibits which the European countries contemplate to send shall also come under his direction.

All indications point toward success of both exhibits, and it is to be hoped that they will fulfill their high purpose and at the same time be a credit to American physicians and hygienists.

Considering the various congresses I do not hesitate to express a feeling of deep anxiety. The first one mentioned, which, for reason of brevity, I will call "The Bell Congress," because it owes its inception to Mr. Clark Bell, has to my knowledge not the support of our best known men in the field of clinical medicine, hygiene, tuberculosis pathology, or tuberculo-therapeutics.

The second congress in point of time, which again for sake of brevity and clearness I may call the "Lewis-Brown Congress" (names of the President and Secretary), while it has many distinguished men of various State and Provincial Boards of Health among the members, has, like the Bell Congress, thus far not among them the men we are wont to look up to as leaders in movements of this kind. No such men as Biggs, Billings, Bowditch, Flick, Jacobi, Janeway, Klebs, Osler, Otis, Trudeau, Tyson are connected with this Congress.

What are our confrères across the water to think if they hear of two American congresses on tuberculosis, and each having an international one under its auspices? The European authorities found it best, instead of having a triennial congress, to have one more year to intervene. This will make the congress in Washington and the one in Paris convene in the same year (1905).

I hope this letter, which I address to the medical profession in America, will result in a satisfactory solution of this very complicated problem. If President Francis, of the St. Louis Exposition, desires that a tuberculosis congress shall be held in St. Louis, let him call to his aid some of the men whom I have mentioned as leaders in our profession. They will counsel with him on the advisability of such a congress, and if it is decided that one should be held, Mr. Francis can be assured that the best element of Europe and America will come to St. Louis to contribute to its success.

The officers and members of the Lewis-Brown Congress must realize that they cannot expect to have their international meeting in Washington to be successful, when, six months later, there will be an international congress in Paris. I hope that there will be enough patriotism and national pride for all interested to realize that two American congresses on tuberculosis is an anomaly, and that, if the St. Louis Congress is to be a success, it must be in the hands of medical men well and favorably known in this country and abroad.

As a solution of the problem I beg leave to suggest the following: During the Tuberculosis Exhibition in Baltimore next January, all interested should meet on a certain date on this neutral ground for the purpose of coming to an agreement about a single representative National or International Tuberculosis Congress, to be held in America. There, too, should be formed a National Committee on Tuberculosis, which is to be in touch with the international tuberculosis congress, which will convene in Paris in 1905.

16 West Ninety-fifth Street,
New York, Nov. 27, 1903.

S. A. Knopf, M.D.

The Urine after Splenectomy.—The following effects of ablation of the spleen upon the urinary secretion were noted by L. E. and F. Demoulin and J. Nicolas (Jour. de Physiol. et de Path. Gén., Sept. 15, 1903): A slight increase in volume, an increase in the content of urea, possibly to be attributed to a hyperactivity of the liver, a transient and slight augmentation of the chlorides and diminution of phosphates, and the absence of glycosuria or albuminuria.

OBITUARY.

DR. CYRUS EDSON.

Dr. Cyrus Edson, of New York, son of ex-Mayor Franklin Edson, died late Wednesday night in the Roosevelt Hospital from double pneumonia.

After an almost continuous attendance on his patients, one of whom had died of a violent attack of pneumonia last Saturday morning, Dr. Edson concluded to take a few days' recreation in the country. He was a member of the Larchmont Club and went there in the early part of the day, where he played golf until nightfall.

On Sunday morning he was found in bed greatly depressed from a severe chill; evidences of pneumonia soon became apparent and he was removed to Roosevelt Hospital without delay.

Dr. Edson was born in Albany on Sept. 8, 1857. He was educated first at a military school at Throgg's Neck, N. Y., and afterward at Columbia College, where he rowed in the 'Varsity crew. He was also a member of the famous Henley four.

Dr. Edson graduated from the College of Physicians and Surgeons in 1881 and was chosen by his class as Grand Marshal. In 1882 he was appointed Assistant Sanitary Inspector in the New York Health Department and was promoted through the regular grades to Commissioner. He was appointed by Gov. Cornell as Assistant Surgeon of the Twelfth Regiment on the staff of Col. Cruger, and served in this office for about one year, when he received an appointment on the First Division staff.

He was President of the Board of Pharmacy of this city and of the County of New York in 1893, and during his career he held the following positions: Chief Inspector of the Second Division in the New York Health Department, Visiting Physician to the Charity Hospital, Vice-President of the American Society of Public Analysis, and Secretary of the Committee on Hygiene of the New York County Medical Society.

Dr. Edson was also the author of many articles on medical and sanitary subjects and the inventor of useful surgical instruments. He was President and Director of the New York Pharmacal Company, Vice-President and Director of the Rapid Safety Filter Company, and a member of the St. Andrews and New England Societies, the Larchmont Yacht Club, and the Society of Medical Jurisprudence.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Section on Genito-urinary Surgery.

Stated Meeting, held October 21, 1903.

Dr. Howard Lilienthal, Chairman *pro tem.*, in the Chair.

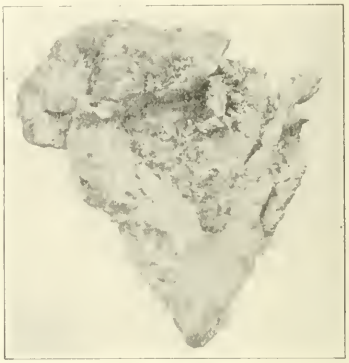
Deformity of Penis Resulting from Operations for Relief of Hypospadias.—Dr. Howard Lilienthal presented a man, twenty-two years old, who had been admitted to Mount Sinai Hospital April 13, 1903, and discharged one month later, after an operation for the relief of a deformity which had followed ten previous operations for the relief of hypospadias. The patient had stated that the opening had been about three-quarters of an inch behind the end of the glans. When he was first seen by Dr. Lilienthal the deformity was such that it was difficult to recognize the organ as a penis. So far as his sexual function was concerned, he was apparently normal and he urinated very satisfactorily, although the stream passed in every conceivable direction. Of course, the cosmetic effect was bad. The first

operation performed upon him was a Beck and it appeared as if, when the urethra had been drawn through to the anterior part of the glans and stitched there, it had sloughed and, as it descended, it seemed to have drawn with it a portion of the glans which, when Dr. Lilienthal first saw him, appeared as an isolated fragment, entirely separated from the glans penis.

Extravasation of Urine, Due to Phimosis.—The patient, forty-five years of age, single, had always been troubled with tight prepuce, never having been able to expose the glans penis more than around the meatus. During the past few years, especially, the tissues have become thickened from frequent attacks of balanoposthitis, and some weeks previous to admission to Bellevue Hospital he contracted what was apparently a chancroid. Previous history of gonorrhea of some years' standing, uncertain. Micturition had been frequent, painful and attended with great effort and straining, until upon the early morning of the day of admission the patient found himself unable to pass anything, when, after pressure and straining, he felt something give way, with slight sensation of relief. A few hours after that time he applied for admission. When the doctor first saw him on the afternoon of the same day the whole penis was immensely swollen from an apparent infiltration, which extended back and involved the scrotum, to about the size of a large orange, giving a perfect clinical picture of extravasation from stricture, and as the penis alone, according to the patient's history, had been at first involved (the scrotum secondarily), and as he was rather heavy mentally as regards previous history as to clap, the doctor was under the impression at first that he was dealing with an anterior extravasation due to stricture, the House Staff having informed him that they had been unable to pass any instrument. The preputial opening was absolutely closed, but a dorsal incision over the glans liberated a large quantity of blood and urine, exposing to view a normal meatus, through which a No. 30 steel sound readily slipped into the bladder. The point where rupture had taken place was apparently just posterior to one side of the frenum. The incision made for the circumcision, passing through the part, which was readily made out in the fresh specimen, is difficult to find now, on account of the shrinkage due to formalin. Incisions were made in the scrotum, and the case made a normal recovery.

Retention of Urine, Due to Foreign Body in Bladder, of Uncertain Origin.—Widower, thirty-nine years of age. First attack of gonorrhea nineteen years ago, with no complications. Second attack, seven years ago, followed by posterior urethritis and cystitis. Micturition the following winter, being three or four times at night, increasing in frequency, until last February he was obliged to get up from ten to fifteen times, at which time he first noticed blood in his urine, *mixed, and never in clots.* When there was no blood, the sediment was marked. During March, an apparent exposure to cold caused an acute retention. Later on, incontinence, which lasted until the middle of April, when he was taken to a Dispensary, prescribed for, and again suffered from retention. He was then catheterized for the first time (no instrument of any sort ever having been previously passed), and a large amount of bloody urine withdrawn. A few hours later he applied for admission to Bellevue Hospital, still with retention. Examination of the urethra showed an obstruction beyond the cut-off muscle, near the bladder neck, while the catheter gave the sensation of passing into and through a roughened false passage, and then into a cavity from which bloody urine was drawn. As it seemed unwise to perform an external urethrotomy, with such an uncertain guide, the doctor determined upon a suprapubic cystotomy, to be followed, if necessary, by a retrograde catheterization, and then urethrotomy. The mucous membrane of the bladder was found highly congested and thickened, as a result of the cystitis, and upon examination of the internal orifice of the urethra this was found quite occluded by what to the finger felt like a semisolid roughened mass. This mass reached backward, and spreading out,

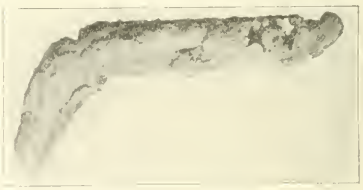
Fig. 1.



Foreign body removed from bladder. Inferior surface, full size.

covered the base of the bladder, to which it was firmly adherent, and when removed, seemed like a partly solidified gauze wipe, covered with a deposit of urinary salts, and triangular in shape, the sides being 6 to 7 cm. in length, the anterior angle or point being twisted and pushed into the urethra (as one would do with a piece of gauze when trying to plug an opening), for a distance of about 1½ cm. But slight hemorrhages from the place of attachment occurred. The urethra was found patent and a full-sized sound passed. Drainage was ob-

Fig. 2.



Foreign body removed from bladder. Left lateral surface, full size. Should be turned to the right 45°, to represent position in bladder, urethral neck.

tained both suprapubically and through the urethra. As there was considerable cystitis present, these drainages were both left *in situ* for some time, the suprapubic tube for two weeks (five days after which the wound closed), and the catheter for three weeks (irrigation having been kept up from two to five times in twenty-four hours). Subsequently the wound reopened, with considerable leakage, and this remained so for several weeks. A perineal drainage was done, but when the patient left the hospital there was still leakage. The exact nature of the mass was impossible to learn; macroscopically i

looked like a gauze wipe, though this was soon disproved both by no history of a previous operation, and by microscope. The diagnosis lay between an exfoliated mucous membrane, the results of the prolonged cystitis, and the remains of a blood clot. The pathological report said that "it was impossible to say whether it was the remains of a blood clot, from which the blood had been washed out, or whether it was originally tissue, as in one or two places it looked like necrotic tissue, but the appearance was not decisive."

Gangrenous Peri-urethral Abscess, of Diabetic Origin.—Dr. M. W. Ware reported this case. The patient was a man, sixty-two years old, who had called his family physician to attend him for chills and fever, which had existed for two weeks. When the physician saw him he excluded everything but malaria, taking into consideration everything that was possible, such as infection, sepsis, etc., examining carefully every portion of the man's body. At the end of two weeks the patient for the first time complained of pain in the perineum, where a swelling was found. This man appeared to be in perfect health and the only statement made concerning himself was that he had had diabetes for twenty years. Absolutely nothing further could be learned from him about the swelling and tenderness in the perineum. There was no redness over it. An examination per rectum revealed the swelling very close to the prostate. The prostate was in a condition consistent with a man of his age. He only got up once a night to urinate. Although he passed large quantities of urine, it was passed in a perfect stream. There was no discharge of blood or pus from the urethra. In fact, there was no clue whatever to the origin of the abscess other than diabetes. He had no temperature or pain and no fluctuation could be detected in the swelling. The mass was incised and a very large amount of pus and slough was evacuated from the perineum. The bulb was exposed and the urethra became visible and looked somewhat peculiar. It occurred to the doctor that if he packed the opening tightly to control the bleeding the patient might have difficulty in passing his urine. He was on the verge of cleansing the urethra preliminary to catheterization when suddenly there was a great escape of blood, and he then thought of the likelihood of a stricture. The catheter was introduced, but could not go beyond a certain point. He found that he had to deal with a gangrenous slough of the urethra. What prevented the escape of pus and blood into the urethra was the mucous membrane, which was intact up to the time of operation. He attempted to drain the bladder, but could not find the proximal portion of the bladder. Not one drop of urine came from the bladder, even when pressure was exerted. Of course, the only thing to do was to drain the bladder, and, therefore, he did a retrograde catheterization, making a suprapubic section. The operation was successful, although very protracted, lasting three hours. The patient lived ten days in fairly good condition, when signs of coma developed and he died. The wound never healed kindly. There was a primary gangrenous cellulitis in the vicinity of the urethra which would not perforate. The question of the propriety of doing a suprapubic section was dwelt upon by the speaker and he thought that if the patient had been left alone sufficient drainage would have occurred from below.

Dr. Pedersen agreed with Dr. Ware's own criticism, in thinking that the suprapubic cystotomy could have been avoided. The urine would have escaped through the perineal wound or could have been drained off through the perineal wound without producing any bad results. He had seen several cases of perineal abscess, sometimes surrounding the bulb of the urethra, sometimes situated to one or the other side of the midline, for which there was nothing to account, except the absorption of pyogenic germs through the skin or through the urethra. All of these abscesses had been very tense and had given very little sense of fluctuation. When incised the pus had spurted out with force.

Dr. Ware said that there was no fluctuation at all, but the abscess was very tense. He did not pass a sound in the beginning. He foresaw no indication for it, because the patient gave no symptoms referable to the bladder, except that he got up once a night. He believed that had he passed a sound at first a large amount of blood and pus would have escaped at once. When he opened the abscess in the perineum there occurred a large spurt of pus, which was followed by great relief; this pressure, he thought, must have torn this urethra, which allowed the escape of blood and pus. With regard to the origin of the abscess he said he was at a loss to account for it. When abscesses are found in diabetic and gangrenous cases, it was customary to fall back for an explanation upon the local element of arteriosclerosis and this certainly existed in this patient, who was sixty-two years old. The infection he thought possibly came from the rectum or uretnra. There was also to be considered the possibility of stone in the urethra which escaped with the pus, and blood when the abscess was opened, but this view is purely hypothetical.

Cases of Urethral Stricture and Their Management.—Dr. James Pedersen read this paper, and said that it comprised the report of seven cases, chosen to illustrate some of the phases and complications of urethral stricture, and to describe the management that seemed appropriate to each individual case. The term "management" was preferred to the term "treatment of stricture," because including all that was necessary to secure to the patient the best ultimate results. Case I was one of a small caliber stricture, complicated by an acute specific urethritis. The urethritis ran its course in five weeks under a hand injection of 1-30,000 bichloride and hot sitz-baths, followed later on by a mild astringent, without causing retention. Dilatation was not begun until two weeks later, and had reached a No. 20 F. when the patient disappeared from observation. Case II was one of irritable and somewhat resilient stricture, which yielded to careful, persistent, dilatation in spite of interruptions in the course, during the patient's absence abroad. The patient entered the hospital with retention of urine, which was relieved with filiform guide and tunnel catheter. A urethral chill followed the first three dilatations, and on one occasion spasmodic retention supervened. Thereafter, by the administration of quinine, irrigation of the urethra with 1-30,000 bichloride, and the use of sterile oil for the lubricant, a recurrence of the chills was prevented. Topical applications of protargol at first and later a silver nitrate solution (1-1,000) were used to overcome the irritability. A month before the end of the second year the patient was passing a No. 29 F. steel sound every third week without reaction and without other precaution than ordinary asepsis. This was discontinued six and a half months later, and now, at the end of a year, neither recontraction nor irritability had developed, and the caliber remained 29 F., as proven by a recent exploration.

Case III presented with a filiform stricture of long standing, deep within the penile urethra. Every course of dilatation that the patient had undertaken had produced epididymitis; consequently he had neglected himself. Once epididymitis had developed independently of any instrumentation. The urine was cloudy, faintly ammoniacal, and full of shreds. After five days of preparation, during which the patient used a hand in-

jection of 1-30,000 bichloride of mercury solution, drank freely of water, and took cystogen, dilatation was begun with a filiform and No. 12 F. tunnel catheter. By the utmost conservatism and the use of 1-3,000 silver nitrate solution instilled into the bladder and voided after each instrumentation, the caliber of the stricture had been increased to No. 24 F. at the end of the fifth month without producing epididymitis or in any way interfering with the patient's attention to an active business. Four months later, in the presence of concentrated urine, the result of errors in diet to which the patient was prone, and immediately after violent exercise and a slight traumatism to the testicle, epididymitis occurred eight days after instrumentation. This accident had occurred in all four times under Dr. Pedersen's observation; twice under conditions similar to the above, and twice after careful attempts to increase the caliber to No. 26 F. The condition of the bladder and the urine remained good, and the patient's general health was now perfect. Treatment in this case was now centered upon the granular condition of the deep urethra.

Case IV applied for the relief of a urinary fistule that opened in the perineoscrotal angle; it leaked urine continuously and allowed a large quantity to escape during every urination. This condition was consequent upon a complete rupture of the urethra sustained one year before. A competent surgeon had operated to relieve the extravasation, which had become extreme and subsequently had reunited the torn urethra. The after-treatment had been interrupted, and the patient had been left in the above described condition. His general health and spirits had become greatly impaired. Examination disclosed a tortuous, filiform stricture in the midpenile urethra. Gradual dilatation with filiform and tunnel instruments and topical treatment of the urethral mucous membrane with silver nitrate solutions closed the fistule on the fifteenth day, when the caliber had reached No. 20 F. Thereafter, as the dilatation progressed at intervals of from one to two weeks, the sinus was alternately open and closed, but at most it allowed only a few drops to escape during urination (the continuous leaking having permanently ceased), until, in the course of the twenty-first week, it closed permanently. The patient now was taught to pass his own sound and the topical treatment of the urethral mucous membrane was continued. Long before this he had recovered his health and had resumed active business. When last seen, a year ago, he was passing a No. 28 F. easily once a week, and had been given instructions to report for inspection, that the frequency with which he should pass the sound could be diminished if possible.

Case V was one of recontraction to a filiform stricture following a neglected urethrotomy performed twelve years before. The smallest tunnel instrument could not be guided through the stricture. The patient being a drinking man, was not able to cooperate properly, and after two attempts to dilate the stricture beyond the risk of retention, an external urethrotomy was performed in the usual way. The patient left the hospital on the thirteenth day and the usual after-treatment was begun.

Case VI was taken as typical of stricture of large caliber, with secondary posterior urethritis and urethrocystitis due to an antecedent urethritis, the irritation of the stricture itself, the excessive use of tobacco and coffee, lithuria, and the practice of withdrawal, in which the patient had indulged three times a week for the three preceding years. The patient had received various forms of treatment with only very temporary benefit. He had begun to use morphine suppositories. The symptoms were so suggestive of vesical calculus that after excluding acute prostatitis, the bladder was searched, but with negative result. Tuberculosis was next excluded. Under rest in bed, bland diet, free diuresis, cystogen and very gentle irrigation of the bladder from the meatus, any distention of the bladder being avoided, he began to improve at once. So soon as the acute symptoms had abated an examination was made that disclosed the stricture of large caliber. This was dilated to a No. 26 F., and the urethral mucous membrane was treated with the usual topical applications of protargol solutions first and silver nitrate solutions later; four times at weekly intervals and again at the end of two weeks. He returned home entirely free from all urethral irritability.

Case VII was one with a series of strictures of about 14 F. in the course of the penile urethra, and a foul scrotal abscess of four months' standing due to extravasation. Through the sinus leading to the abscess a large volume of urine escaped with each urination. The patient was poorly nourished, and in bad general condition, being slightly septic and uremic. After three days of the usual preparatory treatment an external urethrotomy was performed in the usual way, the abscess sinus dissected out, and the abscess thoroughly curetted and drained. A catheter-splint was left in the penile urethra until the fifth day. Perineal drainage was maintained until the tenth day. Owing to a misunderstanding a sound was thereafter passed somewhat too frequently until the seventeenth day. It was then discontinued; but irrigation of the bladder with boric solution once daily was begun to correct the cystitis. Through an error the bladder was filled to its capacity at each irrigation. Thereupon the patient developed an irregular temperature, ranging from 99° to 104° F. The bladder irrigation was discontinued at once. Under free diuresis, stimulants, the urinary antiseptics and creosote, the fever ran its course in about three weeks. The sinus and wound in the scrotum healed permanently without interruption. The patient is now in excellent health, and his urethra has the caliber of a No. 24 F. The paper closed with a summary of certain details in the technic, namely: irrigation of the penile urethra; the choice of instruments; the treatment of the bladder; the topical treatment of the urethral mucous membrane, and the regulation of the patient's use of a sound when necessary.

Dr. Albert A. Berg said he was very much interested in the relation of the cases by Dr. Pedersen, and especially in the one of ruptured urethra, and he wished to know the condition of the tissues of the perineum at the time of operation, when extravasation existed, and whether the parts were gangrenous or not. He asked this question in order to bring forward the advisability of attempting to get primary union of the divided ends of the urethra and to consider the method by which such union should be made. If the tissues were gangrenous primary union was out of the question. The result obtained in such cases from passing a catheter through the urethra into the bladder to permit the parts of the severed urethra to regenerate as proposed by Guyon, was so good that it was a question whether we should complicate such a possibility by attempting to get primary union with sutures. Where we wished to avoid a prolonged after-treatment such sutures might be made by an end-to-end anastomosis. He had recently resected the penile urethra in a boy six years old, for primary stricture and cicatricial stenosis of the canal, and he made an anastomosis by Maunsell's method. The final result was good and no stenosis followed the operation. He believed that Guyon's method of passing the catheter into the bladder from the penile portion fulfilled every purpose.

Dr. G. M. Muren, of Brooklyn, took exception to the use of an 18 F. sound by the patient in the first case re-

lated by Dr. Pedersen. He did not believe it was proper to allow the patient to pass an urethral instrument on himself unless the sound was a large one, and used after the surgeon had dilated the stricture. Students were taught differently. In Dr. Pedersen's fourth case the bladder was entered with a small instrument and he believed that if one could get into the bladder even with a filiform guide urethrotomy was not indicated, except in a very small proportion of cases when of traumatic origin. He thought that if the doctor had persisted with the filiform and tunnel sound, he might have avoided operation. Almost all urethral strictures could be treated by dilatation unless of traumatic origin. The Maisonneuve, the smallest urethrotome, equaled an 8 F. sound, and if an 8 F. could be passed there was very rarely any indication of urethrotomy.

Dr. Walter B. Brouner said that the conservative manner of treating his cases was highly instructive. The more cases one saw and the more operating on such that one did made one the more conservative, and good results would be obtained if one waited long enough.

Dr. Howard Lilienthal said that a great many strictures were now dilated which would have been cut a few years ago. When patients show signs of sepsis after every manipulation about the urethra, then he believed every manipulation became practically an operation. The case reported undoubtedly had to be cut and perineal section was the operation to be preferred. He recollected cases which came under his notice, fortunately not his own, in which fatal sepsis occurred following catheterization. He had had two cases; one of these died of sepsis on account of an urethral instrument being passed by a very competent man. Dr. Lilienthal had the misfortune to have one case in which he did an internal urethrotomy one and a half inches back of the meatus in a very susceptible individual, who had septic symptoms after each instrumentation. He should not have performed this operation without perineal section in this particular individual. At post-mortem there was found a general staphylococcus infection with hemorrhages in the brain and serous cavities. Before doing internal urethrotomy the patient was for three days carefully prepared for operation, washing out the urethra with boric acid solutions, etc., and every possible precaution taken, but still the patient died of sepsis. Every time a sound, or soft instrument was passed the patient had a decided chill, and each time it was thought he would die. In ordinary cases he thought we should persist in dilatation. He asked Dr. Pedersen how long the third case was kept in bed with each attack of epididymitis.

Dr. James Pedersen said that the patient was kept in bed from two to four or five days. The patient had had several attacks of epididymitis before coming under treatment. Within the past year, after being free from them for nine months, he seemed to become more or less used to them, and the testicle was strapped and supported and the man was then able to go about his business.

Dr. Pedersen could not say whether actual gangrene had occurred in the case of ruptured urethra. The patient had not been informed as to such details and he inferred not. It might be assumed, he thought, that the surgeon postponed the suture operation because the tissues were so infiltrated (the extravasation having been in existence forty-eight hours) that to find the ends of the urethra would have been very difficult. Regarding the patient who ran a protracted temperature, he ascribed it to a pyelitis or to some chronic focus in the kidneys reawakened by the back pressure exerted when the bladder was overdistended with the irrigating fluid contrary to orders. The patient was fifty-nine years old and had had a strictured urethra for many years; therefore, the ureters must have become dilated and the kidneys more or less affected. He did not think the temperature due to the instrumentation alone, as that had been successfully performed for several days without exciting any reaction. Regarding the use of sounds of small caliber (less than a No. 20 F.) by a patient, he agreed with the speaker, who offered the criticism, but believed that on occasions an exception could be made to the rule he himself followed, not to allow a patient to pass a smaller sound than 24 F. He believed the case in question justified an exception, as the patient was familiar with the peculiarities of his own urethra, and as the passage of the sound was performed in the office under his supervision. He could not agree with the same speaker that the proper management for all strictures was dilatation. He took the position that every attempt at dilatation should be made before resorting to urethrotomy, and from his experience he could say that by far the larger percentage of strictures would yield to persistent, careful, gradual dilatation, as he thought he had demonstrated in the cases reported; but he believed that there were a few cases in which urethrotomy was the better management. Regarding sepsis and the wisdom of performing urethrotomy instead of dilatation in cases where sepsis had occurred, he believed that such an accident as Dr. Lilienthal had related would occur in the practice of every genito-urinary surgeon. He himself had had the experience twice, the first case was that of a large, robust man on whom, after suitable preparation, he had performed an internal urethrotomy for a stricture situated three inches from the meatus. Eight hours after the operation the patient died. The second case was that of an old man living at a distance from the city, whom he saw in consultation. The symptoms were those of vesical calculus. Catheterism under the usual precautions had been performed a few times in the course of the preparatory treatment. Suddenly the patient developed a severe chill and died at the end of half an hour. Before approaching such a case he believes it necessary to caution the family that the patient had reached a critical period in his life and that considerable risk attended such a simple operation as catheterism under those conditions. He had never had any ill effects from the use of iodoform oil. Nevertheless he had already abandoned it for the use of plain sterile sweet almond oil, which was fully as useful. He believed that plugging the orifice of the fistule in the case of traumatic rupture in order to retain a solution of eucain would not have accomplished the result, as at the time when the local anesthesia was most needed it would have flowed from the urethra back into the bladder. The patient who had suffered recurring attacks of epididymitis had remained in bed from two to five days with each attack. By strapping the testicle the patient had been able to get about very soon after the development of a mild epididymitis. He pointed out that no epididymitis had occurred during the first nine months of treatment.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, held Thursday, October 1, 1903.

The President, John M. Fisher, M.D., in the Chair.

Gauze-bearing Tape, and the Gravity Pad, in Pelvic and Abdominal Surgery.—Dr. John M. Fisher read this paper. The one, it is claimed obviates the annoyance of a miscount in the number of gauze pads used for isolating and exposing the field of operation,

and positively eliminates the danger of the loss of any pads within the abdominal cavity, at the same time minimizing the possibility of losing unsecured pads for rapid sponging, while the other supplements and enhances the advantages of the Trendelenburg posture. The gauze-bearing tape consists of a piece of white tape about a half inch in width and of variable length (three or four feet) armed at one end with a long blunt-pointed needle or bodkin. The gravity pad is nothing more than a large gauze pad, concealed within its folds and fastened to the center of which is a lead plate two by three inches and weighing a half pound. Instead of a single piece of lead smaller plates of the metal may be held in quilted squares of the pad or at indifferent points. The practical utility of the tape was first demonstrated by Dr. Fisher at St. Joseph's Hospital, Philadelphia, on July 27, 1903, in an operation for pelvic disease requiring a number of gauze pads to hold the intestines at a proper level and expose the field of operation. One end of a long piece of gauze was introduced into the abdomen while the nurse quickly, and without any loss of time to the operator, perforated the other extremity with the needle and tape, securing its edge to the distal end of the latter with a turnover tie. After the entire pad had been packed into the cavity with the free portion of the tape trailing from the abdominal opening, other pads were strung on the tape in a like manner but without the necessity of securing them with a knot—the first and successive pads acting as points of fixation for those that followed. No account was taken of the pads thus introduced, nor was this necessary, for the reason that, after a sufficient number were in use to answer the purpose indicated, the removal of same upon the completion of the operation, simply depended upon the withdrawal of the tape to which all were attached. On the following day the same device was used with entire satisfaction in an operation for suppurative appendicitis; while the combined advantages of the gravity pad and the tape were first employed in an unusually trying case of suppurative disease of the uterine adnexa. In operating upon the latter patient it was shown that weight properly distributed is of more importance than bulk in holding the intestines at a proper level. Without the gravity pad three times the quantity of gauze would not have given the same satisfactory result in isolating and exposing the pelvic contents. He contends that by the use of this pad the certainty not alone of confining the intestines to the upper abdominal cavity, but that the maintenance of a more or less immovable wall, against which gauze may be packed to isolate the field of operation and protect the healthy peritoneum from contact with infecting materials, seems to be assured. The gauze-bearing tape was employed in several other abdominal operations by Dr. Fisher with such uniform satisfaction that he feels inclined to continue its use until a more certain method, or a simpler device is presented to safeguard the surgeon against the loss of a sponge within the abdominal cavity—an accident that has befallen some of the most experienced, and very many of the most careful and eminently painstaking operators of our day.

Report of a Case of Rupture of the Parturient Uterus in which Hysterectomy was Followed by Recovery.—This case was reported by Dr. Francis T. Stewart. The patient, a multipara, aged thirty-eight years, had never experienced any unusual difficulty during previous labors. During the last labor she had vigorous uterine contractions up to the seventeenth hour, when the pains suddenly ceased with an enormous hemorrhage from the vagina. Three hours later a dead child was delivered by podalic version. In removing the placenta, which came away spontaneously a large portion of the omentum was found in the vagina. The patient was exsanguinated and very much shocked. Seven hours after the rupture a total abdominal hysterectomy was performed. The laceration of the uterus extended along the left lateral wall from near the fundus down to and into the vagina. The uterus contained a few scattered fibroids and was abnormally friable. The patient made an uninterrupted recovery.

Structures Taking Part in Menstruation.—This paper was read by Dr. E. E. Montgomery, in which he discussed the occurrence of menstruation, the phenomena of increased arterial tension, the tendency of weak vessels to rupture in different portions of the body, and where the hemorrhage following was sufficient to reduce the blood tension, that such hemorrhage would take the place of menstruation, and be known as vicarious menstruation. He discussed the various theories as to the cause of its periodical occurrence, referred particularly to the investigations of Fraenkel which disclosed the glandular character of the corpus luteum, and the probability that its secretion produced an influence upon the blood and nervous system sufficient to induce the recurrence of menstruation where fecundation had not taken place, and to assist in the retention and nutrition of the ovum when fecundated. He asserted that menstruation did not take place in the absence of the ovaries; that the menstrual flow occurred from the Fallopian tube as well as from the uterine mucous membrane. This was evident in the anatomical structure of the tube from the fact that blood was found in the tube in cases which have undergone operation during menstruation; that patients in whom fistulous tracts communicate with the tube have a bloody discharge during the menstrual flow. This view, however, has been combated and the occurrence of hydrosalpinx presented as evidence against it, the fluid here being perfectly clear, which, it is asserted, indicates that menstruation does not take place into the tube, but such cases are examples of diseased tubes in which the inflammatory changes have rendered the vessels more resistant and less likely to rupture. In his opinion many cases of hematosalpinx are the result of the retention of menstrual products.

Tubal Menstruation.—Dr. F. Brooke Bland read this paper by invitation, and said that this case was one of exceeding interest, not alone from the fact of its rarity and from the study of the part played by the tubal mucous membrane in the process of menstruation, but also the lesson it taught in the diagnosis of postoperative fistulæ following abdominal section. Ten months before presenting herself for examination the patient was operated upon for a large intrapelvic (probably broad ligament) abscess. She apparently made a complete recovery from this condition. Shortly after leaving the hospital, however, a small abdominal sinus developed almost simultaneously with the establishment of the succeeding menstrual flow, in the line of the old abdominal incision. On coming under the writer's observation ten months subsequent to her first operation, a small sinus was discovered in the lower half of the old abdominal scar. This readily admitted to a considerable depth an exploring probe. The material discharged from this opening was at times comparatively nil, but during, or, indeed, a day preceding the menstrual period, the discharge increased in quantity, became bloody and assumed all the characteristics of menstrual fluid. The patient was operated upon, and on entering the abdominal cavity, the fimbriated end of the right Fallopian tube was found adherent to the old abdominal cicatrix, and thus the behavior of the abnormal canal, particularly during the menstrual period, was explained. The author is persuaded from the phenomena manifested by this patient that during menstruation the tubal mucosa undergoes changes similar to the uterine mucosa,

though, perhaps, to a somewhat less degree, and thus confirms the observations of some of our most eminent investigators. He is further persuaded that if the function of menstruation is to prepare the endometrium for the implantation and development of the ovum, that the same changes, therefore, are essential to the implantation and development of a tubal or extra-uterine ovum or pregnancy. The practical deductions to be drawn from this case, according to the writer, are (1) that the tubal mucous membrane is an active participant in the process of menstruation; (2) that factors other than the presence of foreign bodies and infected ligatures must be considered in the causation of postoperative abdominal fistulæ; (3) that in the future consideration of the etiology of tubal gestation, the part played by the tubal mucosa during menstruation must be a factor for study. From a perusal of the literature he found but four similar cases recorded, one each by Hoffmeier, Lansdsberg, Serrillon and Thompson. For the privilege of reporting this case the writer acknowledges his gratefulness to Dr. E. E. Montgomery.

Dr. E. E. Montgomery, in the discussion, said that the device which Dr. Fisher had exhibited was certainly worthy of consideration and employment. He knew of nothing that gave him greater anxiety in the performance of an operation than the fear of leaving a piece of gauze in the abdominal cavity. He has not had the privilege of having this procedure introduced to him in St. Joseph's Hospital, and he congratulated Dr. Fisher upon having been so fortunate as to know of this very simple device, which can be employed with such ease, and which makes sure the removal of all the gauze from the abdomen.

Dr. A. J. Downes remarked that in the consideration of Dr. Stewart's paper the question occurred to him whether under similar circumstances the average surgeon would be justified in removing the uterus. Theoretically, it was altogether better to do this, because the inside of the uterus had the possibility of infection, in that the omentum had already been exposed to the air. At the same time, there are few surgeons, who, with a patient as low as this one, could have removed the uterus in twenty minutes. Under the circumstances, the average man would probably be doing better for the patient if he sewed up the rents, and pulled the omentum out through the vagina, after completing a good peritoneal toilet.

Dr. E. E. Montgomery said that the question has been raised regarding the advisability of doing hysterectomy in this case, and in similar ones. He is inclined to believe, from the description which Dr. Foltz gave of his case, of the patient's environment, etc., that hysterectomy was her salvation. Had anything less than that been done the patient would certainly have died from infection. By removal of the uterus, however, the infected structures were removed and the patient saved. He feels that the fact that this operation was done so skilfully and so quickly was due to the opportunities that Dr. Stewart had in his early career, and he is very proud of him.

Dr. Stewart, in closing the discussion, said that the pregnant uterus is large, easily held, and can be gotten out with less time and trouble than a large rent could be sewed. With the uterus as large as it is in pregnancy, with clots of blood and remains of placenta tissue and shreds, which are good culture media, he should think to remove all and leave the abdominal cavity clean, would be the safest course.

Dr. F. H. Maier said he wanted to congratulate Dr. Bland upon his paper, and upon the rare case which he found. Those cases which have been reported of blood coming from the end of the tubes, either through the abdomen or through the vagina, do not prove that the tubal mucosa takes any active bleeding part in the performance of menstruation. It has been known for a long time that hemorrhage from the mucous membrane of the tube does occur during menstruation; but these cases have invariably been ones in which either the tubes or the uterus have been pathologically altered, the alteration usually being inflammatory, a condition in which the structures are quite different from the normal. We know that in the one we have increased number of vessels with hyperemia, so that when the extra flux of menstruation occurs, the vessels are more liable to rupture, with consequent pouring out of blood into the tubes. The mere fact that the profession has so few hematosalpinges as compared with the large number of hydro- and pyosalpinges, is to his mind, evidence enough that it does not have, properly speaking, tubal menstruation. Fritsch and other men, who have removed uteri during menstruation, and who have examined the tubes carefully macroscopically and microscopically, demonstrated that at the most there may be increased secretion, and in some cases, a small number of red cells. There is also a weakness in the case reported by Dr. Bland, in so far that a sister died of uncontrollable epistaxis. Take the history of abnormal bleeding in the patient, together with a bleeder in the family, and the changes in the tubes, and you have ideal pathological conditions that would conduce to hemorrhage from the tubes. Up to the present time, there have been very few cases of tubal menstruation reported. In the case of Chapin-Minard, in which he actually saw blood coming from the uterine end of the tube in a case of inverted uterus, another pathological condition of the tube was had. In a case reported by Wendler, in which hysterectomy was done and the uterine end of the tube caught in the vaginal opening and allowed to remain, there occurred each month, simply an increase of mucous discharge without any hemorrhage. Up to the present time there have been extremely few cases in which blood has been found coming directly from the tube, and these cases undoubtedly have been ones in which there were pathological changes. In most of the cases reported by Bohn the tubes were removed for disease, for a myomatous condition of the uterus or for ovarian conditions.

Dr. Francis T. Stewart has operated upon two cases of ectopic pregnancy during the period of lactation. In one case in which the tube had ruptured, menstruation had not occurred between the time of labor and the time of rupture, eleven and a half months, so that in this case ovulation was not accompanied by menstruation. In the second case rupture occurred eight months after labor. There had been some bleeding from the uterus, which was probably due to the ectopic pregnancy rather than to menstruation. He simply mentions these two cases as bearing upon the relation of ovulation to menstruation.

Dr. Barnes would not cast any doubt upon the apparently strong evidence this case gives as to tubal menstruation, but asked a question simply to clear up a doubt in his own mind. Dr. Bland has stated that the probe passed readily through the old wound, probably into the uterus. It seemed to him in that case it was not improbable that the flow of blood may have been regurgitant blood from the uterus at the time of menstruation. That fact raised a grave doubt in his mind as to the validity of the proof that this case seems to give of tubal menstruation.

Dr. Montgomery, in closing the discussion, said that in regard to the objections which Dr. Maier presented to the possibility of tubal menstruation, and the fact that these cases were inflammatory, and that the latter was the cause of the hemorrhagic discharge from the tube, it is true that most of the cases coming under observation are diseased; but he is inclined to believe

that the inflammation of the tube associated with more or less hyperplasia in the majority of cases one sees the tendency would lead to a decrease of hemorrhage under the influence of blood pressure rather than increase. This is the reason hydrosalpinx or pyosalpinx are not found in the ordinary fluid discolored by blood. It is true that the tube cannot take an active part in the process of menstruation. When one comes to consider menstruation one knows that the discharge of blood is due to increased blood tension, so that the vessels rupture in that portion of the body in which they are the weakest. As the mucous membrane of the tube is similar in character to that of the uterus, except that it doesn't have the glandular structure, it is reasonable to suppose that in a healthy tube we would be likely to have rupture of the capillaries in the tube as in the uterine cavity. The profession well knows that the cervix doesn't take part in menstruation.

Dr. Bland, in closing, said in reply to Dr. Maier's objections relative to the tube undergoing changes when associated with ovarian neoplasms or fibroid tumors of the uterus, desired to state that he has found but very few tubes manifesting any gross change when removed with pathologically altered uteri or ovaries. They are, however, sometimes found. In regard to the question of regurgitation, this tube, in his judgment, was drawn to a higher level than it normally maintains, and, therefore, it would render regurgitation extremely difficult. Moreover, with the patient in the erect posture and the larger opening below, it is perfectly natural to suppose that the uterine menstrual flow would seek the most easy means of exit. He does not think this was an instance of backward regurgitation. He has also been privileged to inspect the internal genital organs of the woman during menstruation, but never examined them with a view to ascertain their true position in the menstrual process.

Exhibition of Specimens.—By Dr. A. J. Downes.—The patient was a woman, forty-eight years of age, with a history of bleeding for the last three years. Rapid abdominal examination revealed the presence of a very large mass. He operated upon her at once. He had not examined her per vaginam until just before the operation, while she was on the table. He thought she had a fibroid, and only then found that the body was fairly cystic. He still thought it was the uterus entirely, so he purse-stringed the cervix with a view of doing a complete hysterectomy. Through a very thin abdominal wall he found the cyst multilocular. It was removed by his electrothermic clamp. The uterus he found large and soft. He removed it with his electrothermic angiotribe, including the cervix. An explanation of the bleeding was found in the presence of two polypi within the uterus. There is a suspicious area, an excoriated surface that will require an examination for malignancy. This is the thirty-second hysterectomy he had done with his angiotribe, and he has practically done 12 others with other surgeons. This was the third hysterectomy to-day. He assisted another surgeon in the removal of two uteri, one a case of cancer, and one an exsanguinated patient who had been bleeding constantly for a number of years. The uterus of this bloodless patient was removed quickly by the surgeon with practically no loss of blood. He had about eight doctors present at his own operation, and no one thought there was a teaspoonful of blood lost. Almost anything can be done with sterile ligatures; the more he uses this method of performing hemostasis within the abdomen the more certain is he that it is far superior to ligatures. He can work more quickly to-day with it than when he was using ligatures two years ago. He has not used a ligature in any place for two years. He can report cases in the hands of other surgeons, such as removal of the shoulder-joint, with hemostasis of the axillary artery, and cases requiring hemostasis of the femoral artery. In hysterectomies the broad ligaments are hemostased and remain closed. A white ribbon is seen traveling down the lateral walls of the pelvis, and with good technic one need never suture the peritoneum at the lateral walls of the pelvis. The only sutures he uses are one or two at the cervix. The results seems to him to be better, and this is the opinion of other men using the instrument. There is less abdominal pain following hysterectomy with the use of this instrument than when ligatures are used. The Fallopian tube is always non-adherent after this method.

Exhibition of Three Specimens of Gonorrheal Pus Tubes.—Dr. George Erety Shoemaker exhibited three specimens of gonorrheal pus tubes. In each instance the patient made a good recovery. No drainage was employed. In one case the diagnosis of extra-uterine pregnancy could readily have been made from the symptoms of delayed period followed by very severe abdominal pain in paroxysms and bleeding from an empty uterus; while the lateral pelvic masses and blue discoloration of the vagina were suggestive.

BOOKS RECEIVED.

The MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

A TEXT-BOOK ON THE PRACTICE OF MEDICINE. By Dr. Jas. M. French, 8vo, 780 pages. Illustrated. Wm. Wood & Co., New York.

A TEXT-BOOK OF PRACTICAL GYNECOLOGY. By Dr. Tod Gilliam. 8vo, 634 pages. Illustrated. F. A. Davis & Co., Philadelphia.

THE PRACTICE OF OBSTETRICS. By Dr. S. Clifton Edgar. 8vo, 1,111 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

THE PRACTICE OF MEDICINE. By Dr. Jas. Tyson. Third edition. 8vo, 1,240 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

PRACTICAL GYNECOLOGY. By Dr. E. E. Montgomery. Second edition. 8vo, 900 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

TREATISE ON ORTHOPEDIC SURGERY. By Dr. Royal Whitman. Second edition. 8vo, 848 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

A MANUAL OF HYGIENE AND SANITATION. By Dr Seneca Egbert. Third edition. 8vo, 473 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

GENERAL PATHOLOGY. By Dr. E. Ziegler. Translated and tenth revised German edition by Dr. A. S. Warthin. 8vo, 760 pages. Illustrated. Wm. Wood & Co., New York.

GRUNDRISS DER AUGENHEILKUNDE. By Dr. Chas. H. May. Authorized German edition, translated by Dr. E. H. Oppenheimer. 8vo, 344 pages. Illustrated. A. Hirschwald, Berlin.

ANATOMY. A MANUAL FOR STUDENTS AND PRACTITIONERS. By Dr. H. E. Hall. Edited by V. C. Pedersen. Demi 8vo, 389 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

A MANUAL OF ELECTROSTATIC MODES OF APPLICATION: THERAPEUTICS, RADIOGRAPHY AND RADIOTHERAPY. By Dr. W. B. Snow. Second edition. 8vo, 302 pages. Illustrated. A. L. Chatterton & Co., New York.

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SPECIAL ARTICLE.

THE HOME IN ITS RELATION TO THE TUBERCULOSIS PROBLEM.*

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I.

In its most important aspects the problem of tuberculosis is a home problem. In an immense proportion of all cases the scene of the drama is the home; on its stage the acts are played, whether to the happy issue of a recovery, or to the dark ending of a tragedy, so commonplace as to have dulled our appreciation of its magnitude. In more than 400 homes of this country there are lamentations and woe to-night: husbands for their wives, wives for their husbands, parents for their children, children for their parents. A mere repetition of yesterday's calamities! and if the ears of your hearts are opened you can hear, as I speak, the beating of the wings of the angels of death hastening to the 400, appointed for to-morrow. That this appalling sacrifice of life is in large part unnecessary, that it can be diminished, that there is hope even for the poor consumptive—this represents a revulsion of feeling from an attitude of oriental fatalism which is a triumph of modern medicine. Our French brethren have made the present position of the question possible. Laennec, the father of modern clinical medicine, gave us the pathology of the disease—and much more. While Galen, Frascatorius, Morton and others believed strongly in the contagiousness of phthisis, it remained for Villemin to demonstrate its infectiveness by a series of brilliant experiments which made Koch's work inevitable; while to Verneuil, Chauveau, Nocard, Brouardel and others we owe the initiation of those local and international congresses which have done so much to rend the veil of familiarity, and to educate the public and the profession to a point at which scientific knowledge has become effective. It seems a law that all great truths have to pass through a definite evolution before they reach a stage of practical utility. First the pioneers, seeing as through a glass darkly groped blindly for the truth, but worked so effectually that by the seventh decade of the nineteenth century we had a clear pathology of tuberculosis and an accurate symptomatology; while in each generation a man had not been wanting, who, like Sydenham, or George Bodington, appreciated the essentials of treatment, as we recognize them to-day. Then Villemin and Koch demonstrated the truth of the infectivity of the disease and the presence of a specific germ. Watchers on the towers, like the late Austin Flint, a lifelong student of the disease, welcomed the announcement as the much-wished-for fulfilment of a prophecy; but, as Plato shrewdly remarks, we are not all awake when the dawn appears, and many in this audience, like myself, had to see the truth grow to acceptance with the generation in which it was announced. It is a horrible thought, but very true, that we reach a stage in life, some earlier, some later, in which a new truth, a perfectly obvious truth, cannot be accepted; and the work of Villemin and of Koch fared no whit better with the seniles and the pre-seniles of the seventh and eighth decades of the last century than did Harvey's immortal discovery in his day, or for the matter of that, did Lister's great work. And now we are in the third or final stage, in which the truth is becoming an effective weapon in the hands of the profession and of the public. The present crusade against tuberculosis, which is destined to achieve results we little dream of, has three specific objects; first, educational—the instruction of the profession and the instruction of the people; second, preventive—the promotion of measures which will check the progress of the disease in the community; third, curative—the study of methods by which the progress of the disease in individuals may be arrested or healed. The three are of equal importance, and the first and the second closely related and interdependent. The educational aspects of the problem are fundamental. Nothing can be done without the intelligent cooperation of the general practitioners and of the community, and it is a wise action on the part of the Phipps Institute to take up actively this part of the work, and to spread a sound knowledge by lecture courses and by publications. It is not too much to say that could we get on the part of the doctors throughout the country an early recognition of the cases, with a practical conviction of the necessity of certain urgent and obvious measures, and on the part of the public attention to hygienic laws of the most elementary sort—could we in this way get the truth we know into the stage of practical efficiency, the problem would be in sight of solution.

Of late years there have been done in this country three pieces of work relating to tuberculosis of the first rank—that of Trudeau in the Adirondacks, enforcing on our minds the importance of the sanitarium treatment of early cases; that of Biggs and his associates in the New York Board of Health in demonstrating how much can be done by an efficient organization; and, thirdly, the work of Lawrence F. Flick, the Director of the Phipps Institute, in demonstrating by a long and laborious research the dangers of the house

* A lecture delivered under the auspices of the Phipps Institute, Philadelphia, Dec 3, 1903.

in the propagation of the disease. In casting about for a subject it seemed to me most appropriate to discuss those aspects of the problem which concern the home in its relations to the disease, since after all the battlefield of tuberculosis is not in the hospitals or in the sanitaria, but in the homes, where practically the disease is born and bred.

II.

The germ of tuberculosis is ubiquitous; few reach maturity without infection; none reach old age without a focus somewhere. This is no new opinion. Gideon Harvey, in his *Morbus Anglicus* (1672, 2d. Ed.), says: "It's a great chance we find, to arrive to one's grave in this English climate, without a smack of a consumption, Death's direct door to most hard students, divines, physicians, philosophers, deep lovers, zealots in religion," which is the English equivalent of the German popular saying, "Jedermann hat am Ende ein bischen Tuberculose." This may seem an exaggerated statement, but the records of Naegeli demonstrate its truth. After all, it is only from the post-mortem table that we can get a true statement of the frequency of tuberculosis in the community. It has long been known that a very considerable percentage of persons not dying from consumption have the lesions of tuberculosis. The records have ranged in different series from 7.5 per cent. (Osler), to 38.8 per cent. (Harris). But these studies were not made directly with a view of determining the presence of tuberculosis. They were the ordinary, everyday observations of the post-mortem room. The only series which we have dealing with this question in a satisfactory way is the study of 500 post mortems in Prof. Ribbert's Institute in Zurich, by Naegeli. It is to be borne in mind that in his work special examination was made of every organ of the body, sections were made of all parts with the greatest care, and the individual lymph glands particularly inspected. Tuberculous lesions were found in 97 per cent. of the bodies of adults.* He gives a very interesting curve showing the incidence at different ages. Up to the fifteenth year there was only 50 per cent., then there was a sudden rise in the eighteenth year to 96 per cent., with a slow rise, so that by the fortieth year a tuberculous focus was found in everybody. This careful research demonstrates the extraordinary susceptibility in man to tuberculous infection, and an equally extraordinary degree of resistance. In the tuberculin experiments of Franz on healthy Austrian soldiers a reaction was shown in over 60 per cent., so that we must accept the conclusion that tuberculous infection, latent tuberculosis, is much more extensive than is the manifest disease.

One interesting point is that we are never left long in peaceful possession of a satisfactory belief about the modes of infection in tuberculosis. No sooner had the pool got quiet and we had settled into a comfortable conviction of the unity of human and bovine tuberculosis, than Koch stepped in and troubled the waters with his views on their dual nature; and now, just as the commotion was subsiding, von Behring stirs the waters by referring all tuberculosis to the milk-jug. But none of these investigations have diminished the importance of the home as the chief source of infection, the place in which the conditions favoring contamination are most common, particularly among the poor. Nor do I think that we can give up the view of aerial convection and of primary inhalation infection in a large proportion of the cases. Figures are, of course, tricky playthings, but it does seem that the overwhelming evidence of the prevalence of bronchial and pulmonary tuberculosis in children is in favor of the older views. After all, how rare is intestinal tuberculosis as a primary lesion, and if, as von Behring supposes, there is a special vulnerability of the bowels in childhood, we should expect a much larger number of cases. It is quite possible, as he has shown, and as Ravenel has demonstrated, that the bronchial and cervical lymph glands may be the first attacked in an animal infected through the intestines; yet the incidence in childhood of respiratory disease is so large, and the incidence of intestinal lesions is so small, that it counts strongly against von Behring's new views. In fact, primary intestinal tuberculosis is extraordinarily rare. Koch states that there have only been ten cases in ten years at the Charité Hospital, Berlin, and of 3,104 instances of tuberculosis in children there were, according to Biedert, only 16 cases, while in adults primary intestinal tuberculosis occurred in but one instance in 1,000 autopsies at the Munich Pathological Institute. In this country the studies of Bovaird in New York and of Hand in Philadelphia speak strongly in favor of air-borne infection in the large majority of cases in children. There is a special liability of the milk to become contaminated by the dust in uncleanly streets and in dirty houses, and upon this mode of infection von Behring lays great stress, and in infancy, either in this way or from the milk of tuberculous cows, he thinks the majority of persons become infected. Apparently he does not adopt Baumgarten's view of the latency of the germ itself, but of the latency of small foci of disease acquired in childhood, which only develop into active tuberculosis under favorable circumstances. It may be well to quote his own words in this connection, as his views are of importance: "I am well acquainted with the statistical arguments based on the higher returns of infection and mortality from consumption amongst attendants on the sick residents in houses occupied by people known to be phthisical, and inmates of prisons, which are intended to demonstrate the origin of pulmonary phthisis from the inhalation of particles of dust, or moisture containing tubercle bacilli. But in view of the extensive dissemination of tuberculosis above described amongst the human race, there is ample justifi-

* Virchow's Archiv, 1900, Bd. CLX, page 426.

cation for the objection that in cases of this kind, where persons succumb to pulmonary phthisis, tuberculous foci pre-exist in their lungs, and that these pulmonary lesions already present developed into active consumption, owing to the adoption by those persons of a mode of life favoring tuberculosis." (*British Medical Journal*, Translation Oct. 17, 1903.)

We need a systematic inspection, according to Naegeli's method, of the bodies of children dead of acute diseases, so as to get, if possible, the true incidence of infection in them. Councilman and others have shown how frequently tuberculosis is present in the bodies of young children dead of diphtheria, but the statistics at our disposal certainly do not bear out this view of von Behring, which would lead us to suppose that infection was largely a matter of childhood. Naegeli's figures on this point are interesting, though he only had 88 autopsies on children. Still his results are of value, as the inspections were made with such very special care. Of these 88 children there were only 15 with tuberculous lesions. In 10 of these the tuberculosis ran a fatal course; in 4 there were advanced lesions which did not cause death, and in only 1 was there a definitely healed lesion.

Sown broadcast as they are in our modern life, it is evident that few people reach maturity without harboring the seeds of tuberculosis. That we do not all die of the disease is owing to the resistance of the tissues, in other words, to an unfavorable, *i.e.*, the rocky soil on which the seeds have fallen. The parable of the sower sets forth in an admirable way the story of the disease. Since I used it in 1892, the illustration has become hackneyed, but in a semi-popular lecture I may be permitted to employ it again. The seed that falls by the wayside are the bacilli that reach our great highways, the air passages and intestines, in which they are picked up by the phagocytes, representing the birds of the air, or they are trodden under foot by the swarms of contending organisms. The seed that falls on stony places is that which reaches the lymph-nodes of the bronchi and mesentery, and though it springs up and flourishes for a while, there is no depth of earth, and, lacking moisture, it withers away into cretaceous healing. And that which falls among thorns represents the bacilli which effect a lodgment in the lungs, the kidneys or elsewhere, where they thrive and grow and produce extensive changes, but the thorns—the equivalent of the cares of this world and the deceitfulness of riches, in the parable—grow up also, and in the form of delimiting inflammatory processes and of contracting fibrosis, choke the seed, and recovery ultimately takes place. But falling on good ground, the seed springs up, increases and brings forth fruit some thirty, some sixty and some a hundredfold, which may be taken to represent the cases of chronic, subacute and acute tuberculosis. We are beginning to appreciate that the care of the soil is quite as important as the care of the seed. We cannot repeat Trudeau's remarkable environment experiment in our cities, but we learn a practical lesson of the influence of fresh air, open spaces and sunlight upon infected individuals. Much has already been done in this direction, and the reduction of the mortality from tuberculosis which has been going on for the past twenty-five years has been in great part due to improved sanitation. We have only made a beginning, but to know the enemy in this case, to know that his strength lies in the homes of the poor, is more than half the battle.

Let us look at the conditions confronting us in one of the large eastern cities. Like Philadelphia, Baltimore is fortunate in the absence of big tenement houses, but, like it, too, it has the disadvantage of a large number of very narrow streets and alleys. There is no drainage system, the sewerage is collected into cesspools, while the surface water and the water from the kitchens runs off on surface drains. There is a very large foreign population and a large number of colored people. While tuberculosis is a very common disease, I do not think the mortality in Baltimore is specially high. In the report of the Board of Health for the year 1901, there were 1,274 deaths from the disease in a total mortality of 10,479, about 12 per cent.

Four years ago two ladies, interested in the disease, gave me a sum of money to use in connection with our work at the Johns Hopkins Hospital. We do not take many cases of tuberculosis into the wards. Last year there were only 53. They come chiefly for the purpose of diagnosis, and we often admit patients from outside the city on purpose to teach them for a period of a week or ten days, just how to regulate their lives. It seemed best to try to do something for our consumptive out-patients, of whom we have an average of about 200 new cases in the year. It seemed to me that a good and useful work could be done by the personal visits of an intelligent woman to the houses of these patients, that she might show them exactly how to carry out the directions of the physician and give them instructions as to the care of the sputum, the preparation of food, and when necessary to report to the Charity Organization as to the need of special diet, or to the Health Board when the surroundings were specially unsanitary. In connection with this an inspection has been made of the condition under which these people live. Of the 726 cases, 545 were whites, and 181 blacks. Among the whites were 53 Russian Jews. There were 402 males, 234 females. The analysis of the reports of Miss Dutcher, Miss Blauvelt and Miss Rosencrantz during the past four years is briefly as follows:

	Russian	Colored	White
Bad sanitary location	62%	53%	16%
Insufficient light and ventilation	71%	65%	39%
Overcrowding	61%	41%	32%
Personal and household uncleanliness	70%	56%	30%

The white population in a large majority of the cases was distributed irregularly throughout the city, but a large proportion live in good loca-

tions, many even on new streets in the suburbs. A small percentage, about 20, live in a bad neighborhood, where the houses are close together and hemmed in in narrow alleys and courts. This region lies chiefly to the south and west of the hospital toward the harbor. In about a third of these people the personal and household cleanliness is fairly good. The colored people make up about a fourth of the cases. They live in much more unfavorable localities, chiefly in narrow, thickly populated and dirty alleys in small, two-story houses, usually old, and the windows often limited to the front—houses in which proper lighting and ventilation are impossible. One important feature in the colored population is the desire always to occupy their own houses, so that there is a comparatively little overcrowding. The Russian Jews form about one-fourteenth of the total number of patients. They live in a neighborhood that was at one time inhabited by the wealthier classes and the houses have now been converted into tenements. The streets are in many cases wide and clean and sunny. The percentage of overcrowding in the rooms is high. Very often a family of seven or eight is found in two rooms. The contrast in the matter of personal and household cleanliness between the Russians and the other whites is most striking. It is exceptional to find the former in a condition, either in person or house, that could be termed in any way cleanly. A very serious thing is the frequency with which the patients move from one place to another. The 726 patients had during their illnesses occupied 935 houses. Last year the percentage of removals was still higher. The 183 patients had occupied 379 houses. Another important point brought out was the fact that fully 66 per cent. of the patients visited did not sleep alone.

Amid such sanitary surroundings the patient can scarcely avoid contaminating the house in which he lives, while, perhaps more important still, the environment, combined with insufficient food, etc., lowers the resistance of the other members of the family and renders them more liable to active disease.

How are we to combat these conditions? *First,* by an educational health campaign in the homes. The young women who have been engaged in this work in Baltimore have frequently reported to me the readiness with which their suggestions have been accepted, particularly in regard to the care of the sputum. To be successful such a campaign must be carried out by the Board of Health, and a staff of trained visitors, women preferably, should do the work. To carry this out effectually there should be, *secondly,* in all cities a compulsory notification of cases. The plan has worked most successfully in New York, and it should be everywhere followed. There are no difficulties which cannot be readily surmounted, and there need be no hardships. *Thirdly,* in most cities the powers of the Health Boards should be greatly enlarged, so as to deal efficiently with the question of proper disinfection of the houses occupied by tuberculous patients. *Fourthly,* the question of the housing of the poor needs attention, particularly in the matter of proper control of tenements, and the regulation, by law, of the number of persons in each house. *Fifthly,* by placing upon the landlord the responsibility of providing, under the control of the Board of Health, a clean, wholesome house for a new tenant. *Sixthly,* the wholesale condemnation of unsanitary streets and blocks, and the rebuilding by the municipality, as has been done in Glasgow and elsewhere. We cannot make people cleanly or virtuous by act of the legislature, at the same time we cannot leave important sanitary details in the hands of irresponsible persons whose view of life is limited to returns and rentals. The extraordinary reduction in the mortality from consumption in the large cities is due directly to an improvement in environment. That much more remains to be done in the way of betterment the facts I have presented fully show.

III.

And then we have to face the all-important fact that at present an immense majority of all tuberculous patients have to be treated at home. Probably not 2 per cent. of the cases can take advantage of sanitarium or climatic treatment. What has the new knowledge to say to the 98 per cent., which is debarred from the enjoyment of these two great *adjutores vitæ?* Very much! Read aright, a message of hope to many. Just as we have learned that climate in itself is not the prime essential, but a method of life in any clime, so we have found that even under the most unfavorable surroundings many cases recover in town and country, if rigid system and routine are enforced. But "Hope, that comes to all," as the poet sings, comes not to the large proportion of the unhappy victims in our overgrown and crowded cities. What but feelings of despair can fill the mind in the contemplation of facts such as I have laid before you in the analysis of our inspection in Baltimore? So numerous are the patients that private beneficence shrinks at a task, which the city and State authorities have not yet mustered courage to attack, except in one or two places. Hospital care for advanced cases, sanitarium treatment for incipient cases can only be provided by an enormous expenditure, but we must not be discouraged, and the good work begun in Massachusetts, New York and in this State will grow and prosper. After all, the campaign in which we are engaged is one of education; only let us not forget that teaching has not all been on the side of the profession. We have all been at school during the past quarter of a century, and at school we must remain, at once teachers and pupils, if we are to make the knowledge we possess effective. We are not living in Utopia, and in the matter of sanitation the man on the street is a blundering, helpless creature whose lessons are put bodily into him at a heavy cost of life and health. You know this story only too well in Philadelphia. To provide accommo-

dation for all consumptives is impossible, but it is not unreasonable to look forward to the day when every large city will have a sanitarium for the treatment of the early cases, situated not far from its outskirts, with all the equipment for open-air treatment. Let there be some place at least where a poor workingman or working woman may have a chance for life. Now, as we doctors know only too well, hundreds are sacrificed in whom the disease could have been arrested. The hospital care of the very sick should be provided for in special wards of the city hospitals. To give the best of care to these unhappy victims is a true charity to them; to place them where they cease to be a danger to the general health is a true charity to others.

In the warfare against tuberculosis the man behind the gun is the general practitioner. The battle cannot be won unless he takes an active, aggressive, accurate part. That he is not always alert must be attributed in part to the carelessness which a routine life readily engenders, and partly to a failure to grasp the situation in individual cases. The two points to be impressed upon him are first, *that early recognition of the disease can only come from better methods of practice and greater attention to the art of diagnosis.* The insidiousness of the onset, the protean modes of advance, and the masked features of even serious cases should never be forgotten. As Garth so well puts it in his Dispensary (1699):

"Whilst meagre *Phthisis* gives a silent blow;
Her *strooks* are sure; but her advances slow.
No loud alarms, nor fierce assaults are shown,
She starves the *fortress* first, then takes the *town.*"

Too often precious time is wasted and the golden opportunity is lost by the failure of the physician to make a thorough examination of the chest. I am every day impressed with the necessity of more rigid, routine examination, even of the "ordinary case." In illustration of the carelessness which is so readily acquiesced in, let me mention a patient who was brought to me only a few weeks ago, supposed to have a protracted fever after typhoid. Her father, a physician, her husband a physician, and it is scarcely credible that neither of them had the faintest idea that the poor soul had advanced consumption, though it had reached a stage in which there was shrinkage of one side of the chest, and the diagnosis could almost be made by inspection alone. The carelessness is a sort of mental inadvertence, to which even the best of us at times seem liable. A very distinguished and careful physician brought his daughter to me a few years ago to have her blood examined, as he felt sure she had a chronic malaria. She had little or no cough, but an afternoon rise of temperature, and it turned out to be the usual story—quite pronounced local disease at her left apex. There had not been a suspicion on the part of her father or of the family.

On the other hand, we must be careful not to diagnose tuberculosis too readily. The physicians of our sanitaria have a good many tales to tell in this matter.

The second point is the *necessity for a more masterful management of the early cases.* Here comes in that personal equation so important in practice, and which has such a vital bearing in the prognosis of the disease. The dead hand of the Arabian still presses sore upon our practice, and precious weeks are too often lost in trusting to a polypharmacy which in some instances would make the heart of Avicenna or Averroes to rejoice. It may seem hard to say so, but my firm conviction is that more tuberculous patients are injured than helped by drugs. We have not yet come to the belief—to the practical belief, at any rate—that the disease is not to be *treated* by them. After so much has been written and spoken, one would suppose that the essential features of the treatment of the disease were generally recognized, but the practical experience of any man who sees a great deal of tuberculosis is directly to the contrary. It is not so much that the drugs do harm *per se,* but that weeks of priceless value are lost in trying to check a cough and quiet a fever in a patient who is allowed to continue his work and is up and about. I cannot agree with a recent writer who says that the tendency at present is rather to make too little than too much of medicinal treatment. Perhaps in advanced cases we are more sparing, but in early stages *I know* that we are still leaning on the Egyptian reed in which our fathers trusted and trusted in vain. Year by year I see only too many instances in which the mental attitude of the physician toward the disease clearly indicates that the idea of an efficient home treatment by fresh air had never been entertained. What I would like to plead for most earnestly is this home treatment of early cases by modern methods. I am not addressing myself now to city physicians. But I would appeal to the practitioners in the country and in the smaller towns and in the suburbs, where the conditions are so much more favorable. I have been much interested for several years past in a group of cases scattered all over the country, usually in the farmer or mechanic class, in which I have supervised with the physician a home treatment, often with striking success. The remarkable case which I reported in 1900 gave me great encouragement, as the complete arrest of the disease was accomplished under the most primitive surroundings by the persistence and devotion of the patient herself, who richly deserves the good health she enjoys to-day. There have been disappointments; all cases are not suitable, all cases are not curable, and it is not easy to say which ones are likely to do well. The most favorable looking patient with a small patch at one apex may have a progressive disease and die in the best of surroundings, while a case with high fever, sweats and an extensive lesion may improve rapidly. On November 24, a fine, stalwart fellow came to see me, in whom I did not recognize the *poitrinaire,* of September 28, carrying his diagnosis in his

face. The sunshine and open air of a Maryland village had been enough; enough, at any rate, to put him on the high road.

Let me mention in a few words the essentials in this home treatment of consumption in the small towns, country places and the suburbs of our large cities. *First,* the confidence of the patient, since confidence breeds hope; *secondly,* a masterful management on the part of the doctor; *thirdly,* persistence—*benefit is usually a matter of months, complete arrest a matter of years, absolute cure a matter of many years; fourthly,* sunshine by day; fresh air night and day; *fifthly,* rest while there is fever; *sixthly,* breadstuffs and milk, meat and eggs.

Let us not forget that it was a country practitioner, George Bodington, of the little town of Sutton Coldfields, in Warwickshire, who, in 1840, revived the open air treatment of tuberculosis. "To live in and breathe freely the open air, without being deterred by the wind or weather, is one important and essential remedy in arresting its progress—one about which there appears to have generally prevailed a groundless alarm lest the consumptive should take cold." And he gives a number of cases showing the good effects of the open air treatment. He seems to have carried it out on the plan which was so strongly advocated by Sydenham, which was a combination of open air and riding or carriage exercise. There are few things more striking in the writings of Sydenham than the insistence with which he states that consumption is curable. It is worth quoting a paragraph which I take from Locke's Anecdota Sydenhamiana, as it is put in a more striking way than in his general work. "I am sure that if any physician had a remedy for the cure of a phthisis of equal force with this of riding he might easily get what wealth he pleased: In a word, I have put very many upon this exercise in order to the cure of consumptions, and I can truly say I have missed the cure of very few; in so much that I think how fatal soever this disease be above all others, and how common soever; (for almost two-thirds that die of chronical diseases die of a phthisis), yet it is this way more certainly cured than most diseases of less moment: Provided always that this travelling be long persisted in according to the age of the patient, and length of the disease. . . . Women or very weak men that cannot ride on horseback may ride in a coach and yet attain the same end, as I have seen by often experience." In reality this practice of Sydenham never died out, but it was in practice in New England in the early days and throughout the eighteenth century. The late Henry I. Bowditch, who did so much to further the study of tuberculosis in this country, states that he followed it in his own case.

Let me conclude with a quotation from De Quincy, which puts in graphic language the question which so many generations have asked and asked in vain, but which we have been permitted to answer in part at any rate, and to answer in hope. "If you walk through a forest at certain seasons, you will see what is called a *blaze* of white paint upon certain *élite* of the trees marked out by the forester as ripe for the axe. Such a blaze, if the shadowy world could reveal its futurities, would be seen everywhere distributing its secret badges of cognizance amongst our youthful men and women. Of those that, in the expression of Pericles, constitute the vernal section of our population, what a multitudinous crowd would be seen to wear upon their foreheads the same sad ghastly blaze, or some equivalent symbol of dedication to an early grave. How appalling in its amount is this annual slaughter among those that should by birthright be specially the children of hope, and levied impartially from every rank of society! Is the income-tax or the poor-rate, faithful as each is to its regulating time-tables, paid by *any* class with as much punctuality as this premature *florilegium,* this gathering and rendering up of blighted blossoms by *all* classes? Then comes the startling question—that pierces the breaking hearts of so many thousand afflicted relatives: "Is there no remedy? Is there no palliation of the evil?" It is one of the greatest triumphs of scientific medicine to be able to reply, Yes, the evil may be palliated and is rapidly being lessened, and for many at least, a remedy has been found.

ORIGINAL ARTICLES.

SYPHILIS AND DIVORCE.

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The relations of syphilis with marriage have a legal as well as a medical aspect. The introduction of syphilis into marriage entails not only physical damage to the health and life of the wife and children, but it involves a question of legal responsibility; divorce as well as disease may play a rôle in the domestic tragedy. The communication of syphilis in married life by one partner to the other, or even the exposure of one partner to contagion from the disease may affect (1) contracts to marry, (2) annulment of the union, and (3) divorce.

The ideas of most medical men as to the legal consequences of the existence or communication of venereal disease in the marriage relation are vague and incomplete; yet it is of the utmost importance that the physician should have an understanding of the law of marriage and divorce as applied to these diseases. In his efforts to persuade a syphilitic man to defer his marriage until it is safe, the physician should, if necessary, hold out as a threat the legal consequences incurred in transmitting his disease to his wife. This is not only a valid, but in many cases may be a sufficient argument in dissuading him against contracting a premature marriage. Then, again, the physician may be consulted by a married woman who has been infected by her husband and who confides to him her griefs, and at the same time her

determination to no longer live with a man who has done her this grave injury. In order that the physician may advise intelligently in a situation of this kind, he should be familiar with that branch of judicial law which relates to syphilis and divorce. He should know what the law accepts as good ground for divorce, what must be the concurrent conditions of its intervention, as well as the attendant disadvantages to the complainant which are inseparable from a suit for divorce in which syphilis is pleaded as a cause of action.

In many cases of marital infection rupture of the marriage occurs without an appeal to the law. The woman, on receiving proof of her husband's infidelity in the shape of venereal disease, abruptly leaves the conjugal bed and returns to the paternal roof. In other cases there is an effective separation between the husband and wife while the outward appearances of the marriage relation are still preserved.

We may now inquire what redress the law affords a woman who has been infected by her husband with syphilis in the marriage relation.

In the first place, it is to be observed that the mere existence of venereal disease in one partner, or even its communication to the other, does not *per se* constitute sufficient ground for divorce. There must be certain concurrent conditions of an aggravating character presently to be considered.

It is to be noted that in no civil code is venereal disease specifically mentioned as a statutory ground for divorce, nor is there any penalty laid down for its transmission. The word "syphilis" nowhere appears upon the statute books of this or any other country. The nearest approach to it is in the civil code of Kentucky, in which it is stated that the contraction of a loathsome disease by one of the spouses is a specific ground for divorce, and it has been held that venereal disease is included under the term "loathsome disease."

The absence of any specific legislation in the matter of the transmission of syphilis may at first sight appear to the medical man as evidence of the failure of the law to recognize the grave physical injury which may result from the communication of this disease. The wisdom of the law is, it is claimed, shown in the laying down of certain general principles, the application of which is left to the judgment of the court according to the circumstances of the particular case. If syphilis always bore the stamp of immorality; if it were exclusively contracted by impure intercourse before marriage or through adulterous relations after marriage, there would be some grounds for this criticism, but, as is well known, syphilis is not necessarily a venereal disease; it may be contracted accidentally through various professional and industrial relations, and it may be innocently communicated by one partner to the other in marriage. If the code specifically decreed that one partner might demand a divorce because of syphilis communicated by the other, the strict construction of the law might work great injustice, as, for example, in the numerous cases recorded where a nurse has acquired the disease from a syphilitic nursling, and has communicated it to her husband. In such cases the woman may be entirely ignorant of the nature of her disease, and cannot be held either morally or legally responsible. In cases of *unconscious syphilis* the responsibility of the conjoint who gives the syphilis is legally as well as morally attenuated.

Fournier reports the case of a physician who presented a chancre of the tonsil after having put in his mouth a paper cutter, which he had previously used as a tongue depressor in examining the throat of a patient; the nature of the chancre was not recognized, and he communicated syphilis to his wife. The law cannot foresee or provide against these possible contingencies, and it perhaps wisely includes the offence under some general rather than under a specific statute.

In order to give a clear understanding of the legal relations of syphilis with marriage, the writer has endeavored to present a digest of the decisions in some of the more important cases which have come before the courts for adjudication, from which deductions may be drawn as to the spirit of the law and the general rule or practice in dealing with cases of this character.

For the citation of cases and rulings which have come before the courts in this country the writer is indebted to a paper in a recent number of the *American Law Review* by C. F. Huberich, of the University of Texas, on "Venereal Disease in the Law of Marriage and Divorce," and to the admirable monograph of Thibierge on *Syphilis et Deontologie*, for a knowledge of the present position of jurisprudence in France in relation to syphilis and divorce.

While the principles which underlie the decisions made by different tribunals are practically the same, the rulings are not uniform and appear to be somewhat contradictory. This is not surprising in view of the varying circumstances and accessory conditions which attend the transmission of venereal disease in the marriage relation. Some of these circumstances are held to aggravate, others to mitigate the responsibility of the offender, and they must all be taken into consideration and given due weight in arriving at a decision. Special cognizance is always taken of that cardinal principle of equity which guides the administration of justice in all actions involving civil or criminal responsibility—*viz.*, whether the act charged has been committed *knowingly and wilfully*.

While syphilis is not specifically mentioned as a cause for divorce in the statute books, actions for divorce may be instituted upon the ground of "cruelty," as it is generally held by the American and English courts that the communication of this disease constitutes cruelty, which is a statutory ground for divorce. The French courts provide that one partner may demand divorce from the other on the ground of "grave injury,"

and, since the communication of syphilis in marriage is held to be a grave injury, proceedings for divorce are usually instituted upon this ground or upon the ground of infidelity. The civil codes of almost all civilized countries recognize infidelity as sufficient ground for divorce, and, if this charge can be proven, the graver injury of syphilitic infection is usually passed over in silence.

Contract to Marry.—The existence of venereal disease in either party to a contract to marry is sufficient ground for the other party to refuse to fulfil the engagement, and therefore constitutes a valid defence in a breach-of-promise suit. Although this point has not been judicially determined in England, it has been laid down as a general rule that if the condition of the parties was changed after the making of the contract it was good ground for either to break off the engagement.

Few actions have been brought for breach of promise in which this defence was set up, as an indication of the line of defence would be quite sufficient to induce any respectable or self-respecting woman to discontinue the suit. Still, such cases have come before the courts in this country for adjudication where the defendant in a breach-of-promise suit refused to perform the contract on account of the existence of a venereal disease in himself.

The rule of the law as given by Huberich is that where a venereal disease is contracted prior to, but was not known to exist at the time the contract to marry was entered into, or when such disease is contracted subsequent to the making of the contract to marry, but through no wrongful act on the part of the defendant, its existence furnishes a good defence for an action of breach of promise. In his ruling in one of the cases just described, the judge states:

"We cannot understand how one can be liable for not fulfilling a contract when the very performance thereof would in itself amount to a very grave crime not only against the individual, but against society itself. . . . The law will constrain no man to assume a position so full of peril as to place within his reach the lawful means of gratifying a powerful passion at the risk of another's health or life, and the possibility of bringing into the world children in whose constitution the seeds of a father's sin shall lurk."

As a Ground for Annulment.—The existence of a venereal disease in either party at the time of the marriage may render the marriage voidable. The annulment of the union in such cases would seem to be based upon the rule of the law which recognizes permanent and incurable impotency sufficient ground for divorce. In one of the cases the ruling was, that "while there was no such malformation which renders complete sexual intercourse impossible, there was a physical reason that rendered her (the defendant) incapable of healthy coition. Every such act, by reason of her physical condition, was attended with great danger of communicating to him incurable disease and endangering his health and life. . . . In the case at bar the petitionee's organs of generation were at the time of marriage in an incurably diseased condition, which, while it did not physically render her incapable of copulation or of bringing into life a child a mass of syphilitic sores, as good as dead when born, yet it did render copulation and procreation on the part of the petitioner impracticable, because the act endangered both his health and life."

In a noted New Jersey case the marriage was annulled on the ground of "fraud." The man had syphilis, although he had assured his intended that he had never had venereal disease. Upon discovering his deception she brought suit for the annulment of the marriage.

The court held that "to annul a marriage for a fraudulent representation inducing the contract it must be shown that the fraud affected an essential of the marriage. An explicit statement by a man about to be married that he was not affected by the loathsome disease called syphilis, made when it was his duty to state the truth, and knowingly false, is such a fraudulent representation as affects an essential of the marriage relation."

"The decree cannot be had upon the uncorroborated evidence of the complainant. The contract of marriage is one of exceptional and peculiar character. On the grounds of public policy the State has an interest in the status created by a marriage contract, and when made it can only be dissolved on grounds and by judicial proceedings sanctioned by law."

In the above case it was proven by the testimony of the physician who had treated him that the man had syphilis and was informed of the nature of his disease.

In another case, in which an action for the annulment of marriage brought by the wife on the ground that the defendant was constitutionally affected with syphilis, and where he had knowledge of his condition at the time he entered marriage, but failed to inform plaintiff of the fact, and she, immediately upon learning of it, and before the marriage was consummated, left him and refused to live with him as his wife, it was held that "his concealed disease was such as would leave with him no foundation upon which the marriage relation could properly rest; that the libellant could not live with him as his wife without making a victim of herself for life and giving to her offspring, if she had any, an inheritance of disease and suffering. Few, if any, would be bold enough to say that it was the duty of the libellant on discovery of the fraud before consummation of the marriage, to give herself up as a sacrifice and to become a party to the transmission of such a disease to her posterity."

In another case annulment was decreed, although the parties had continued to cohabit after the nature of the defendant's disease became known to the plaintiff. It was expressly held that such continuance of cohabitation could not be regarded as a condonation.

Divorce.—"To constitute a ground of cruelty it is usually required that the disease should have

been actually communicated to the complainant; that the complainant should have been ignorant of the existence or nature of the plaintiff's disease at the time of its communication, and that the defendant should have infected the petitioner knowingly and wilfully. If all these facts concur, no question of the propriety of granting the divorce can arise unless there are facts showing condonation of the offense" (Huberich).

The weight of authority is that the disease must be actually communicated.

Dr. Lushington rules as follows: "However great the moral delinquency of consummating a marriage with the probable chance of communicating the venereal infection, I am not prepared to say that so doing constitutes legally an act of cruelty as understood in these courts. In order to constitute an act of legal cruelty there must be, in my opinion, an actual communication of the disease, and the running of the risk is not sufficient."

Lord Stowell held that "attempted intercourse with the complainant when the defendant was afflicted with a contagious disease would suffice to sustain a charge of cruelty."

In still another decision it was held that "a reasonable apprehension of injury is sufficient, and the complainant need not wait until the wrongful act is committed."

Justice Key, in a case before the Texas Court of Appeals, states: "A man may, as a result of his own debauchery, become so diseased as that living and cohabiting with him will probably destroy the health of his wife, and we are not prepared to say that such fact would not, of itself, entitle a pure and innocent woman to a divorce, in the absence of specific proof that he had communicated to her a loathsome venereal disease."

In the courts of this country stress is laid upon ignorance of the existence or nature of the disease on the part of the complainant. In one case in which the wife was informed of the disease of her husband and of its contagious nature, but continued for a year and down to the last moment of their living together to submit willingly to his embraces, she was denied a divorce.

On the contrary, where the complainant is ignorant of the nature of the plaintiff's disease, no case of waiver or condonation arises. A divorce was granted in a case where the husband had communicated syphilis to his wife, but had ascribed her syphilitic sore-throat to drinking from an infected vessel, and continued marital relations with her.

In the French courts no stress is apparently laid upon this point, as it is hardly to be assumed that a woman would marry a man knowing him to be syphilitic or permit a consummation of the marriage unless through violence.

The French tribunals "consider the transmission of syphilis in marriage a grave injury and a cause of separation, whether the husband had been attacked before or after marriage, and attach the same gravity to the simple fact of exposing the conjoint to the contraction of this malady when the husband knows he had been attacked and recognized its contagious nature."

In all courts of law especial stress is laid upon the knowing and wilful communication of the disease. The defendant must know that he had an infectious disease and that it was attended with danger of infecting the other party, and it is a question for the courts to decide whether the defendant's statements upon this point are entitled to credence. Also when the defendant believes himself cured at the time when the infection is alleged to have taken place, he is not guilty of cruelty.

The Texas Court of Appeals held that lack of knowledge on the part of the defendant as to his condition merely renders his conduct less culpable.

It has been held that "the mere fact that the husband has communicated disease to his wife, whatever may be thought of it in other points of view, is not enough to constitute legal cruelty. It is abundantly clear that for this purpose the act must be a wilful one. Wilfulness may, however, be generally inferred from the fact of communication coupled with the knowledge on the part of the defendant of the existence of the disease in himself." It is to be understood that wilfulness does not imply a wish or intent to injure.

"If a man, knowing that he was suffering from a complaint of that sort, had intercourse with his wife and did communicate it to her, even although he were to swear, and you were to believe him, that he did not mean to communicate it, I doubt whether you ought not to say that he had been guilty of cruelty. If he knew that his body was tainted and that he might communicate the disease; if he knew that he was running the risk of giving his wife the complaint from which he was suffering, and he did give it to her, I am disposed to think that it would be an act of cruelty." "Whoever does an act likely to produce injury, and injury follows, can never excuse himself by saying that he hoped a probable consequence might, by some good fortune, not follow."

A long series of decisions of the French courts might be quoted establishing the fact that syphilis is a cause for divorce, at least in a case where the disease has been knowingly communicated. The fact that the husband had before marriage a venereal malady and communicated it knowingly to his wife, represents to her alone an injury of sufficient gravity to justify divorce. On the other hand, it has been decided that a wife cannot demand divorce for having been infected with a venereal disease when it is not established that it had been knowingly communicated by her husband. Also that the communication of syphilitic disease to the wife by the husband is not a cause for *separation de corps* when at the moment of his marriage he believes himself cured and that the communication of his disease had been involuntary.

The French courts attach an especial importance as to whether the disease of the husband was contracted posterior to marriage on the general principle that the acts of the spouse anterior

to marriage cannot in principle serve as a basis for an action for divorce. Exception to this principle has been made, however, in certain decisions in cases of transmission of syphilis.

It will be seen that the "concurrent conditions" upon which decisions are based are practically the same in all courts of justice. There are certain circumstances, however, which are held to aggravate or attenuate the charge of cruelty or grave injury. The French tribunals admit different degrees of responsibility in persons introducing syphilis into marriage.

First, it has been held as an aggravating circumstance that the disease has been communicated soon after marriage or in the first approaches.

Second, if the husband has transmitted the disease in conjugal relations imposed by marriage.

It has been held by an English court that an attempted intercourse, the husband forcing his wife to his bed, when he was afflicted with venereal disease, would suffice to constitute a charge of cruelty, although the disease was not actually communicated. It is also regarded as an aggravating circumstance when there is reason to believe that an infant conceived as a result of these relations will be born tainted with the disease.

The responsibility of the husband is increased when he has made no attempt to repair the damage to his wife's health by securing proper medical treatment, and especially when he has placed obstacles in her way of obtaining proper treatment, or sacrificed the care of her health to "false shame." On the other hand, it is regarded as a mitigating circumstance if the husband has promptly employed every means to secure proper and efficient treatment.

It would seem that the gravity of the accidents or the more or less severe results of the infection to the wife is not held by the courts as affecting the responsibility of the husband, as there is no question of damages or penal responsibility.

From this survey of the jurisprudence of syphilis and divorce it appears that when a woman has been infected with syphilis by her husband the law may grant her a divorce on the statutory ground of cruelty or infidelity. In the State of New York, where "infidelity" is recognized as the sole ground for divorce, the charge of cruelty could not be pleaded.

Under the present conditions of the law the physician should advise his patient that syphilis should never be invoked as a cause of action for divorce unless it constitutes the chief or only phase of cruelty that can be alleged. The charge of infidelity, if it can be sustained, should always be the preferential plea. Infidelity on the part of the husband is in no sense a reflection upon his wife. The guilt, as well as the dishonor, rests upon the husband. The syphilis should be hidden, as it is not necessary to play this incriminating card. It does not affect the result, and when brought forward is ignored by the jurist. If the fact is pleaded and established in the public courts that a woman has been made the recipient of a loathsome disease which is regarded as incurable and transmissible to her children, even if she is successful in gaining her suit, she must be branded as the bearer of a shameful disease, and her children, if she have any, must bear through life the stigma of syphilis.

The woman who seeks a divorce upon the plea of syphilitic infection by her husband should be fully informed of the ordeal before her. In the first place, it is necessary to furnish legal proof. While the existence of syphilis in the wife may appear as *prima facie* evidence that she has received it from her husband, it is by no means conclusive to the courts. She must prove (1) that her husband has syphilis; (2) that she has syphilis; (3) that the syphilis of the husband is the origin of her own. She must reveal certain secrets of private life, often disgusting details of shameful indignities to her person; she must be prepared to face the inevitable scandal, the disgrace and publicity of divorce proceedings; she must appear in court or before a referee and testify to humiliating experiences, which are not always carefully guarded from the public. If her husband defends the suit he may falsely plead as a mitigating circumstance that he thought he was cured, did not know his disease was contagious, that the contagion was involuntary, etc. Even if successful, she will find that she has purchased her freedom at the price of humiliation and shame. The only punishment imposed upon the guilty perpetrator of the wrong is that he is denied the further privilege of dishonoring his wife's body. No wonder that many women, seeing no way of escape open, and realizing that the harm is done and cannot be undone, accept their fate and philosophically make the best of it.

Still, there are many cases of marital infection of such aggravating character that the self-respecting wife finds her situation simply intolerable and not to be endured. She feels that she must escape at any cost from the bonds that bind her to a man by whom she has been dishonored and diseased.

As the law now stands there is no civil or penal responsibility imposed upon the husband for the transmission of syphilis in the marriage relation. In addition, there are so many concurrent conditions to be complied with, so many loopholes of escape for the guilty partner from the elastic interpretation of what constitutes "knowing and wilful" communication, so many extenuating circumstances that may be pleaded, such as "I did not know I had the disease;" "I thought I was cured," etc., that the existing laws do not constitute a sufficient protection. The question of the practical wisdom of a specific statute penalizing the transmission of venereal disease in marriage will be elswhere considered.*

In regard to the physician's line of conduct in the matter of syphilis and divorce, it is rarely advisable that he should appear in the interests of his patient. The proof of the communication of

* Social Diseases and Marriage, now in press.

the disease can be furnished by a medical expert appointed by the court for the purpose of making an investigation. If the physician has treated the wife, his prescriptions are always available in furnishing presumptive proof, at least, of the nature of the disease for which he has treated her. Especially should the attending physician not give a letter or certificate that she has syphilis and that he is treating her for it. In the first place, he may be the physician of both husband and wife, and should he give a certificate it would betray the secret the husband confided in him. In the second place, certificates of this character are looked upon with suspicion, and have even been rejected by the courts.

SOME PRACTICAL SUGGESTIONS ON PHYSICAL EDUCATION IN THE PUBLIC SCHOOLS.

BY RICHARD COLE NEWTON, M.D.,
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At the last meeting of the American Academy of Medicine, Hon. William T. Harris, U. S. Commissioner of Education, called attention to the present desultory and often injurious methods of teaching and practising gymnastics in the public schools; laying particular stress upon the fact that from a lack of proper medical knowledge on the part of the instructors, the pupils were liable to injury instead of benefit from these exercises.

The import of his remarks was that only from the medical profession can a remedy for this and other evils in the present system, or perhaps, I should say want of system, in the physical education of children, be expected.

An editorial in *American Medicine* (March 7, 1903) is so apposite that I cannot refrain from quoting from it: "As vigorous health and its accompanying high spirits are larger elements of happiness than any other things whatsoever, the teaching how to maintain them is a teaching that should yield in moment to none other whatever." Taking these famous words of Herbert Spencer's as a text, our editor proceeds to preach an excellent and pithy sermon on the physical education of the young. He says among other things, "It is not desirable to produce athletes, physical culture fanatics or practitioners of new-fangled and erratic 'systems' and 'pathies,' what is needed is simple instruction in the proper care and use of the body," . . . "and we strongly urge more literature and personal explanation from the American medical profession. The subject is much too important to be left entirely in the hands of lay teachers and writers." There is no question about the truth and reasonableness of these remarks, but they do not go far enough. Essays on education are of no use to a child of four, nor does a knowledge of physiology give one a good digestion; what I have tried to point out elsewhere,* and what a recent editorial writer in the *Lancet* demands is, that physical education should be practically applied and should be made not alone commensurate with mental education, but preliminary to it. At least educational systems should be so arranged that scholars who are unfit physically, or who are begining to show any evidence of physical breakdown from mental overwork, should be turned over to the doctor, who shall have the power to modify or even suspend all mental work until the bodily condition can be brought up to the standard average for the age of the particular child. Mental injury to the growing child is so insidious in its inception, and may be so long battled against with more or less success by the ambitious and painstaking scholar, that as a rule, the teacher will utterly fail to detect it, until irreparable damage shall have been done. Hence it is indispensable that the doctor should have a controlling voice in the education of young children. It is not perhaps necessary to enlarge on the theoretical aspect of this question; I can only say that the practical unanimity among educators in the opinion that some working rules must be formulated, for the promotion and preservation of the health of scholars is a convincing proof of the necessity for such rules Many, if not all, of the teachers are looking to us for help. In the first place then, I would lay down as rule number one, that no scholar should be admitted to the regular course in the public schools under seven years of age, eight would be better. The "eminent physiologist" quoted by Spencer, who asserted that eight years of age is as young as study in school should begin, was unquestionably right, and, so far as I know, this assertion has never been gainsaid by any scientific man. It is true that the public schools demand our children at three and a half or four for the kindergarten, and at five many of them begin the regular graded course. This is at least two years too young, and is often the foundation of the nervousness and mental breakdown of after years. Quoting Spencer again, "There is a given order in which and a given rate at which the faculties unfold, if the course of study conforms itself to that order and that rate, well . . . Nature is a strict accountant . . . If you will let her follow her own course, taking care to supply in right quantities and kinds the raw materials of bodily and mental growth required at each age, she will eventually produce an individual more or less evenly developed." And that is what the ideal education is, an even development of one's powers, moral, mental and physical. Having now started the child in the public school at the age of seven, or eight, medical supervision of him should never cease until he graduates at, say eighteen. A number of educators have told me that at least ten per cent. of all the scholars in American public schools are defectives either mentally, or physically. These can only be separated and properly classified by a competent medical examiner. A large percentage of these are probably suffering from faucial adenoids, others from defective eye-

* Deep Breathing. New York Medical Journal and Philadelphia Medical Journal, Nov. 7, 1903; Why Is Modern School Life Especially Disastrous to Girls? Medical Record, Sept. 6, 1902; The Doctor and the School Teacher. Medical Record, Oct. 18, 1902.

sight, others are deaf, others are rickety, etc. None of these conditions are hopeless. And judicious advice and treatment at the proper time might be of inestimable advantage to the unfortunate scholar, and might save permanent injury and perhaps a lifetime of suffering.

I have purposely omitted contagious diseases from the above partial list, because the necessity of medical inspection of schools to detect and segregate cases of trachoma, ringworm, scabies, syphilis, and so on, and the whole list of exanthemata with diphtheria and pertussis, is now generally acknowledged, and in many cases at least, health boards have succeeeded in having inspectors appointed, who shall visit the schools daily or as often as possible, for the purpose of discovering and isolating cases of contagious disease.

The medical inspection, however, should not cease at this point, but should extend to the examination and record of the physical condition of every scholar, the age, height, weight and lung capacity, and the condition of the teeth, eyes, ears, method of breathing, whether oral or nasal, etc., should be observed and recorded and a copy of the record should in every case be sent to the parents and to the family medical adviser. At least once in three months, this examination should be repeated and the results carefully recorded and compared with the record of three months before and these reports should go to the parents just as regularly and faithfully as the reports of scholarship. The work already done in the Boston and Chicago schools is most valuable and promises excellent results. The tables of height and weight of scholars at different ages so carefully worked out by Dr. Christopher, of Chicago, cannot fail to be a valuable guide to medical inspectors of schools.

I might call attention to the early discovery and probable rectification of scoliosis by this method. It has been asserted that four out of five educated women have more or less scoliosis. Whether this is true or not, the percentage of sufferers from this deformity is needlessly large, and could be, to a great extent, prevented by such a system of medical inspection of schools as I have outlined.

How shall we provide for this general school inspection, and how shall competent medical men be induced to give up sufficient time and thought to the proper execution of these duties? This is an extremely difficult question. Perhaps the suggestion of Dr. Cook, made in his address as chairman of the Section of Diseases of Children at the last meeting of the American Medical Association, is as good a one as we can adopt, viz., that in each State a commission of five members be appointed, at least two of whom shall be physicians, this commission shall have jurisdiction over all questions of physical education and child labor. The members of this commission shall be appointed by the judges of the Supreme Court of the State. The said commission shall appoint inspectors, who shall see that all laws relating to the public schools and to child labor are properly executed and shall report regularly on all hygienic matters connected with the public schools and public education, as well as make the reports now required by law in many States as to the hygienic condition of factories, etc. The appointment of the commissioners by the judges of the highest State court, Dr. Cook esteems an especially valuable feature, as it will probably forever remove the questions of child labor and the execution of the truant laws, etc., from the domain of petty politics, and vicious contract labor.

It seems odd by the way, that we pass laws to prevent the poor man from sending his child to work too young, while we sacrifice the health and wellbeing of our own children by an injudicious and often improperly administered system of public school education.

An attempt more or less efficient is made in many public schools to give physical instruction regularly, but so far as I am aware, no competent physician oversees and controls this instruction. The poor children are liable to be made and often are made the victims of some ill-advised or poorly worked out theory or fad. Furthermore, no medical supervisor, as a rule, watches the children at the time of their exercises, who is competent to decide whether any of them are being injured by the exercises. Cases of congenital heart disease, emphysema, diabetes, Menière's disease, etc., may be found among the scholars. They must be separated and treated as each individual case requires, and there is no way of detecting and classifying all of these diseased conditions in the public schools, except by the regularly recurring medical examination and record of every single pupil, as outlined above. With the large present outlay of money in the public schools,* the hiring of a competent medical man for each 1,000 or 2,000 pupils can easily be borne, especially if the often repeated advice to simplify the courses of study be carried out.

So that a number of teachers of the ornamental and superfluous branches may be dispensed with and the money now used for their salaries may be spent in hiring the necessary medical inspectors and buying more apparatus, etc., by this means the scholars may have more systematic and efficient physical instruction. The time is ripe for action and any good, practical plan which shall modify the present indiscriminate and often injurious educational methods, both mental and physical, will meet with the approval of (1) the children, (2) the parents, (3) the profession, and lastly, as I know from interviews with many friends among them, from the conscientious overworked teachers. If the latter can shift the responsibility of the care of the health and physical development of the scholars to the shoulders of our profession, where it unquestionably belongs, it will considerably lighten the burdens and anxieties of

* According to the last report of the Commissioner of Education, the United States spent for the school year 1900-'01 $222,043,236 on elementary education.

an overworked and underpaid and frequently unappreciated class in the community.

The duty of the medical profession is plain and there can be no question that the advanced educators will unite with us in any well-considered and practical scheme for conserving the health of the scholars by first forestalling injury from any preventable cause, and secondly, by instituting and maintaining an efficient system of physical education.

REPORT OF CASES WITH EXHIBITION OF SPECIMENS DIAGNOSED BY THE CYSTOSCOPE.

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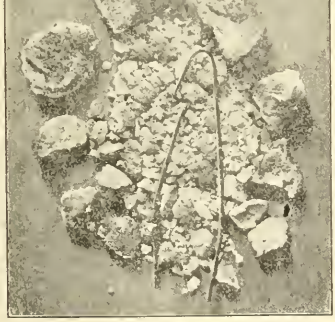
The importance of careful examination of the bladder, accompanied by catheterization of the ureters, with the electric cystoscope in all doubtful or stubborn cases, is too well appreciated to need emphasis before this Society. The following brief report of a few cases, on account of certain features of interest, are taken from a list of 126 bladder cases, examined for diagnosis, and will illustrate the importance of this method of diagnosis:

Case I.—Miss B., aged twenty-four years. Referred by Dr. Hall. Examined and operated upon



Specimen of Case I.

at St. Anthony's Hospital. Patient had complained of severe cystitis for about 2½ years; had bladder irrigated repeatedly with antiseptics, and had taken much urotropin and salol, with little benefit. Upon examination with the cystoscope, I discovered a calculus as large as a hen's egg, and through its center, imbedded in the calculus, was a hairpin. This settled the diagnosis, and upon questioning the patient, she admitted for the first time that she had had considerable irritability of the urethra from early childhood, and had often relieved the irritation by using the hairpin, until it slipped into the bladder. The patient was anesthetized, and the urethra dilated until I could introduce a large forceps and crush the stone. I then introduced a large Kelly endoscope, and by means of reflected light removed the pin and the pieces of the calculus. I then thoroughly irrigated the bladder to remove every particle of stone, and finally dilated the bladder with water, and examined with the Nitze cystoscope to see if I had overlooked any pieces. The patient was placed on urinary antiseptics, and within one week left the hospital entirely cured.

Case II.—Mrs. K., aged sixty years. Consultation with Dr. Speidel at patient's home. She had complained of frequent hemorrhages from the bladder for over a year. Upon examination with the cystoscope I discovered a large bald tumor on the posterior wall of the bladder. This tumor would bleed when touched with the beak of the cystoscope. Considering the size and type of the tumor, I did not advise an operation, but injected small quantities of alum water and adrenal solution, with some benefit. About four months later she died. Had we made a diagnosis earlier, the growth could probably have been successfully removed.

Case III.—Mrs. P., aged forty years. Patient seen during my service at Louisville City Hospital. Complained of chronic cystitis of several months' standing. Examined bladder carefully with the cystoscope, and found pus coming from the ureter on right side, with clear urine on left side. No need for a catheterization of ureters, as the pus was thick, and easily seen on the right side. This evidence caused me to examine in the region of the kidney on the affected side, and I discovered a large tumor. Patient was later anes-

Specimen of Case III.

thetized and laparotomy performed. The large hydropyonephrotic kidney had dissected up the mesocolon, and by making an incision in the outer

side of the ascending colon, I was able to reach the kidney. This organ I walled off from the other structures with gauze, and carefully removed the fluid contents of the kidney and its partially occluded pelvis by aspiration. I then with ease removed the contracted kidney, and as much of the sacculated and strictured ureter as possible. No stones were found either in the kidney, pelvis or ureter. The other kidney was normal in appearance. The patient did well for about a week, and then died from suppression of urine. I believe this patient would have been saved if diagnosed earlier.

Case IV.—Miss H., aged twenty-seven years Patient seen during my service at Louisville City Hospital. Complained of chronic cystitis. Examined with cystoscope and discovered a large silk ligature imbedded in bladder-wall, on left side, above orifice of ureter. This I removed through a Kelly endoscopic tube, and in a short while the cystitis disappeared. The patient gave a previous history of having been operated on for ovarian tumor on the left side.

Case V.—Mrs. C., aged thirty-five years. Patient seen in consultation with Dr. W. H. Wathen at St. Joseph's Infirmary. She had complained of a chronic cystitis and pain on one side for about a year, and the diagnosis by her general practitioner was tuberculosis of the kidney. Upon examination with the cystoscope, the bladder-wall was found pushed over to one side, and a small sinus discharging pus into the bladder, clearly demonstrating a pelvic abscess, which with bimanual examination was difficult to diagnose or locate. Operation per vaginam confirmed the diagnosis, and a large quantity of pus was evacuated from a pus sac or cavity situated high up in the pelvis. After this the patient made a nice recovery.

Conclusions.—These few selected cases illustrate the necessity for more thorough and accurate methods of diagnosis in this important field of work. Of my 126 cases examined with the cystoscope on account of obscure diagnosis, I catheterized the ureters in 23 cases, failed to do so for various complications in 12 others, and for the remaining 91 I did not need to catheterize to make a diagnosis

HYSTERIA.

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If Egyptologists have correctly translated hieroglyphics, hysteria existed among the people of the most ancient civilization. From this early period to the present the affection has been known under various names—trances, visions, vapors, hysterics, hyppoes and numerous Latin synonyms, most of which "have reference to the supposed uterine origin of the disease." The name hysteria comes from a Greek word that means uterus. The term is quite significant of the belief our forefathers in medicine had in regard to the seat of the disease.

I shall not bore you with the symptomatology, diagnosis and prognosis of hysteria. They are too well known, even by the medical student, to justify a repetition in a paper of this kind. My remarks will be devoted entirely to the etiology, pathology and treatment—three very "uncertain quantities."

We all know that the true etiology has never been discovered, or, at least, there is but one point in regard to the primary cause about which all of the authorities agree—that heredity is the most important factor in the production of hysteria. A study of the history of hysterical phenomena and my own observation teaches me that even this "point in common" is not well taken. That heredity plays a part (but a very insignificant one) no informed physician will call in question. There are sufficient evidences occurring in our every-day practice, if we would but observe and ponder over them, to convince any physician, it seems to me, that conscious and unconscious imitation is decidedly the greatest factor in the etiology of hysteria. Take, if you please, the history of medicine and study closely the numerous epidemics and endemics of hysteria. Mills tells us that "no country within the range of medical observation has been entirely free from them. Communities civilized and semicivilized, Christian and Mohammedan, Protestant and Catholic, have had a fair share of the visitations." The visions and trances of the ancients were peculiar forms of hysteria. The "dancing mania" of the Middle Ages, that spread over a good part of Europe, is another singular manifestation of this psychosis. That most wonderful psychic phenomena of history, the Crusades, which Hume says "has ever engaged the curiosity of mankind, as the most signal and most durable monument of human folly that has yet appeared in any age or nation," is but another form of hysteria.

Those religiohysterical disorders, "the jumps, jerks and convulsions" of the good old camp-meeting are strange phenomena which we have all witnessed at the dawn of the twentieth century. How many endemics of convulsions and peculiar hysterical manifestations have been reported from hospitals, orphan homes and the various health resorts, which were produced by the inmates unconsciously imitating the hysterical phenomena of the first victim? Who can contemplate the rapidity with which the dancing mania and the fire of the Crusader spread from town to town, nation to nation and continent to continent, and not believe that unconscious imitation is the most powerful factor in the etiology of hysteria?

It seems to me that alienists, in looking for the primary cause of hysteria, have entirely overlooked the history of the early mental training of the individual. They find most usually that the grandmother, mother or some relative had hysteria, therefore they conclude that it must be hereditary. From a study of the previous life of the

cases coming under my observation, I am convinced that the pernicious training of the psychical element of the patient during infancy and childhood has much more to do with the production of hysteria than heredity.

There are few parents who appreciate the great importance of properly training the unconscious mind of infancy and childhood. Psychologists tells us that this is by far the most critical period of the life of the individual. Dr. Schofield in his late work, "The Unconscious Mind," says: "All around the child lie countless forces, unnoticed and unknown by the parent, while within the child lies a vast receptive capacity, unknown to the parent, and still largely ignored by these psychologists who should be his teachers—the unconscious mind; and it is to the action of these unnoticed forces upon the ignored mind that the child's real early education and character are mainly due." Dr. Waldstein, speaking of the great importance of a proper environment for early childhood, says: "What is often called heredity is simply the expression of a subconscious self, the beginning of which can be traced to early childhood, when the actions of their parents and their example are subconsciously perceived, and by their constant repetition form fundamental impressions."

Herbert Spencer said: "A man resembles far more the company he keeps than that from which he descends." Sir Michael Foster, the great physiologist, in the *British Medical Journal* of August 21, 1897, while speaking of the manner in which physiology deals with the muscular vascular and glandular parts of the body, says: "Nor does she do otherwise when she comes to deal with the nervous tissues. Nay, it is the very prerogative of these nervous tissues that their life is above that of all the other tissues, contingent on environment and susceptibility of education." S. Weir Mitchell says: "There exists in all of us, feebler in age and more potent in childhood, a tendency to automatic and unconscious imitation which is the parent of a good deal of mimicry of disease." Pryor is quoted by Dr. Schofield as saying: "Every look, every word, every movement is without the knowledge of the mother or nurse, suggestive to the child, *i.e.*, they determine his mental representation, and, later, his actions."

When we learn from such noted biologists and from every-day observation the paramount importance of a judicious environment for the receptive plastic mind of infancy and childhood, is it any wonder that the daughter, who is a constant companion of the hysterical mother from birth to advanced girlhood, should breathe in the contagious atmosphere in which she is completely submerged? Is it necessary for us to appeal to heredity for a philosophical reason why hysteria is a disease peculiar to the female? We should not think it strange that some cases of hysteria do not develop until middle age or late in life and thereby attribute it to a "neurosis," a term as indefinite as the diagnosis of eczema by the colored M.D., "a cutaneous affection of the skin." The majority of such cases, if the true history could be known, would reveal the fact that hysterical impressions were left on the unconscious mind of the patient during the receptive period of childhood. These impressions were stored away in the unconscious mind and remained, as it were, inoperative until some potent exciting cause forced them above the plane of consciousnes. As an illustration of this very condition, I call to mind the singular history of a hysterical male patient of mine. He is a laboring man who had always enjoyed good health until he married one of three hysterical sisters, whose mother was also a victim of the same disease. About one year after his marriage he began to have nervous attacks, and soon developed major hysteria. My first impression was that it was a plain case of mimicry. But from a closer investigation I found that this man had been raised by an old maiden aunt who was a confirmed subject of hysteria. So my final solution of the case was that the hysterical impress was made on his unconscious mind during childhood by the constant example of the aunt, but that it remained quiescent until a powerful exciting cause, the hysterical paroxysms of his wife, to whom he was passionately devoted, forced it into an active conscious state.

All of our text-books record the fact that hysteria occurs more frequently among females than males. Some statisticians give the ratio of hysterical men to hysterical women of 1 to 20. Please bear this in mind. I have never seen a satisfactory reason given for the greater frequency of hysteria among females than males. If the majority of the subjects inherit the disease or the diathesis, what prevents the male from enjoying his part of the birthright? I would like to have a philosophical answer to this question. I am convinced that the male and female child inherit the diathesis in the same ratio, other things being equal. Is there any anatomical, physiological or embryological reason why they should not? If so, I hope some gentleman will give it in the discussion.

Why is it "that of hysterical women who have daughters, more than half transmit the disease to one or several of them, and again, that rather more than half of the daughters of the latter also become hysterical?" I believe it is usually due to imitation. The female child is kept almost constantly in the shadow of the hysterical mother. The male child is out with his play-fellows or in company with the father. What power could prevent the young daughter, who is the constant companion of the hysterical mother, from partaking of some of the joys and sorrows, and from unconsciously mimicking the contortions of the mothers' face and other actions while in a hysterical paroxysm? How many young daughters have failed to "get religion" when they heard the joyous hysterical exclamation of that beloved mother as she "came through" at a good old camp-meeting? The child is a creature of imitation like unto its distant relative, the anthropoid ape.

There is a family in our town with four genera-

tions of hysteria living under the same roof; great-grandmother, grandmother, daughter and granddaughter. It would require a superhuman power to prevent the little four-year-old granddaughter from becoming a confirmed subject of hysteria living in her present environment. A few evenings ago I was called to see a member of this family, and while there the grandmother seemed to be very much amused over a remark the granddaughter had made in regard to a slight attack of bronchitis from which she was just recovering. She made the remark innocently and seriously that "she felt very much like her grandmother, so nervous that she could not keep herself still and that she really believed she would die." How amusing to the grandmother! Little did she dream of the import of that remark, that this little girl had, unconsciously to everyone, taken her first lessons in imitating the hysterical phenomena of the grandmother. The unconscious psychic element in this child is receiving a most pernicious training.

All pathologists agree that no organic lesion has been found that accounts for hysteria. Most of the recent writers on the subject seem to be coming to the conclusion, as Dana expresses it, that "hysteria is essentially a psychosis." From the recent discoveries in regard to the physiology of the ductless glands, I believe that the pathology of the disease will be found somewhere in the "adrenal system." The many symptoms of major hysteria that resemble those diseases due to disorders of this body, leads me to believe that the pituitary gland has much to do with hysteria. Observe how closely the symptoms following disease or injury of the body of the sphenoid bone resemble some of those of hysteria. We have in acromegaly not a few symptoms in common with cases of major hysteria—anesthesia, general weakness, wandering pains, impaired vision, edema, polyuria and possibly others.

The treatment of hysteria has been just as unsatisfactory as that of cancer, or any other of the so-called incurable diseases. All of the anodynes, hypnotics, nervines and tonics of the pharmacopœia "have been weighed in the balance and found wanting." Harsh and cruel methods have been tried in vain, and to-day we are as much at sea in regard to the treatment of this vexatious disease as was Hippocrates. For centuries it was supposed to be entirely of uterine origin, as the name would indicate. This theory has been proven to be most absurd. But from the methods in use to-day among numerous general practitioners we would conclude that they still cling to "the faith once delivered by the Saints," the medical Priests of the Dark Ages, that the sexual organs surround a great central battery from which all hysterical currents are discharged. With the old bivalve vaginal speculum and the iodine cotton swab quite a few physicians of the present time are duping the poor women, deluding themselves, and in the end collecting some right handsome bills.

Hysteria is a psychosis and should be treated as such. To be sure, any complication should have attention, but hysteria proper should be treated psychically. It is an ideal disease, and as an eminent physician has said, if "ideal centers can produce ideal diseases, surely the rational cure is to first bring these ideal centers into a healthy condition and then make them the means of curing the ideal disease." The patients must have the very best mental, moral and social management. There should be a proper training of the will powers, by as many different methods as you have patients to treat. You can philosophize with some intelligent subjects as to how they can brace themselves to hold in abeyance the paroxysms, others may be cajoled and flattered, while a few demand the sternest and almost cruel treatment. The character of each individual must be closely studied.

To remove from the public the danger from the pernicious example of hysterical subjects is one of the most difficult problems to be solved by the alienist. How are we to prevent the children of the poor from associating with and imitating a case of hysteria in the family? The disease is found as frequently among the rich as among the poor.

The rich are able to send their afflicted on a sea voyage, to the various health resorts or to any institution that promises relief, but, like our Saviour said, "we have the poor with us always." One case of hysteria often ruins the happiness of the entire family, becomes a burden to a small community, a pest to the physician and a menace to society in general and childhood in particular. How to relieve this situation among the poor is a serious question. The most feasible plan that suggests itself would be to have homes or resorts where they could have all the necessary medical attention and be far removed from all anxious relatives and sympathizing friends, and at the same time their hysterical phenomena would be removed from infants and children. We have epileptic homes and leperous colonies; why not suitable resorts for the hysterical? Hysteria is far more prevalent than epilepsy, and under past methods about as rebellious to treatment. In many respects the life of an epileptic is preferable to that of the hysterical subject. Such afflicted poor certainly appeal most touchingly to the humanitarian and their deplorable condition and the far-reaching evil of their life to the community should be more prominently brought to the notice of philanthropists.

Summary.—1. We must look to the unconscious impressions of infancy and childhood for the etiology of hysteria.

2. The disease primarily is purely a psychosis.

3. The pathology, I believe, will be located in the adrenal system.

4. The treatment for hysteria *per se* should be psychical. Suitable resorts should be erected for properly treating and caring for the afflicted among the poor.

5. By such treatment, I believe, hysteria would soon be on the decrease instead of on the increase, as it has been for years.

ENLARGED BRONCHIAL GLANDS.

BY J. R. CLEMENS,
OF ST. LOUIS.

Enlarged bronchial glands, as met with in children, are noteworthy for three reasons: (1) Their great frequency; (2) the manner in which they are overlooked or ignored; (3) their potential toward tubercle and hence the danger of neglect.

In 70 consecutive cases in a children's clinic, where the children were brought up for various ailments, in 20 of these enlarged bronchial glands were found by me to be present. Hector Mackenzie, of the Brompton Hospital for Consumption, London, says the lymphatic glands, particularly in the young, have a special liability to infection by tubercle. In 897 cases of tuberculosis in children, which he has collected, the lymphatic glands were affected in 792, or in 88 per cent., rather more than seven-eighths of the whole. In his experience it is common to find caseous bronchial glands in cases of tuberculous meningitis and general miliary tuberculosis and it is certain that tuberculous disease of the lungs may be consecutive to tuberculous disease of the bronchial glands. Osler is equally insistent on the close connection that exists between tuberculous meningitis, miliary tuberculosis, phthisis pulmonalis and the parent seed of tubercle in the enlarged bronchial glands as met with in childhood. Walter Carr says: "In children who have died with tuberculous disease in any part of the body, the bronchial glands are usually affected and as statistics from the post-mortem rooms of the children's hospitals in London prove that fully one-third of the cases show evidence of tuberculosis, it is easy to see how common caseation of these glands must be. Out of 120 autopsies on children presenting tuberculous lesions the writer found caseation of the bronchial glands in 96 (80 per cent.) and a more careful examination of some of the remaining cases would probably have still further increased this number. Some observers state that caseation of the mesenteric is more frequent than of the bronchial glands but this certainly does not conform with the experience of the London Hospitals." I could go on indefinitely quoting equally pertinent extracts from authoritative sources to prove the sovereign importance of the early recognition of enlarged bronchial glands as met with in children, but the above will suffice.

It is strange that in some of the very latest text-books on diseases of children the subject of enlarged bronchial glands is either not touched upon or dismissed airily in a few words under the heading of Sequelæ of Whooping Cough, Measles, etc.

If ever there was an opportunity given us of exercising prophylactic measures against tubercle at its inception we surely have it in the beneficial control we can exert over it by an open-air life, sound food and the medicinal aids of iodide of iron and arsenic where we find enlarged bronchial glands in little children. This condition is often diagnosed as asthma, chronic whooping cough and the dyspneic condition of laryngismus stridulus when associated with the malformation of the thorax known as pigeon breast (the malformation being wrongly attributed to rachitis) but rarely if ever to its proper cause. Treatment is accordingly futile.

The most frequent history given by the mother is as follows: After some illness, two or three years previously, generally measles or whooping cough, the child has never been quite the same, remaining thin and weak and subject to a chronic cough.

The cough varies in intensity from a cough so slight that, but for its chronicity and the suggestion this conveys of tubercle, would not be noticed, to a cough, so violent and urgent, as to raise the suspicion of whooping cough in the minds of those ignorant of its chronicity. On examination of the child's chest after he has been undressed we will find on

Inspection.—An unwonted and prominent network of veins over the upper part of the sternum and thorax, deep blue in color and of large caliber.

Percussion.—On percussing across the chest from right to left dulness for a variable distance on either side of the sternal border will be noticed, the dulness being sometimes more extensive on the right than on the left and vice versa. Dulness will also occasionally be found in the interscapular region at the level of the fourth or fifth dorsal vertebræ. The dulness from above downward does not extend below the lower border of the manubrium.

Auscultation.—On hyperextension of the neck, so that the child's face may be in a plane horizontal with the ceiling while his body is in the upright position a bruit similar to the hum heard over the neck vessels in high grades of anemia will be met with, the retraction of the head tilting forward the lower end of the trachea and with it the glands, causing compression of the left innominate vein. Occasionally, due to pressure effects of the enlarged glands, we will meet with cases of cyanosis of the lips and face, spasmodic attacks of dyspnea and an increase in the anteroposterior diameter of the thorax due to atmospheric pressure and obstruction of the trachea. Sometimes there is a general recession of the soft parts of the chest wall with the resulting malformation known as "pigeon breast." Puffiness of the face will sometimes be found suggestive of renal disease. A very suggestive combination of conditions is (*a*) enlargement of the cutaneous veins over the upper part of the chest; (*b*) some deficiency of resonance over or on either side of the manubrium and (*c*) a venous hum in the same position when the head is retracted; especially if these occur in a thin, delicate-looking child, suffering from a cough for which no cause can be detected in the throat or lungs and from slight intermittent evening pyrexia without assignable cause. Brilliant results will reward our efforts if we bestir ourselves at once and we will have the satisfaction of knowing that we have cheated the great white plague of at least one victim.

A HUMBLE STERILIZER.

BY DOUGLAS H. STEWART, M.D.,
OF NEW YORK.

Although my experience with the very simple apparatus herein described is limited to efforts at procuring afebrile labors, yet its application may be extended to almost every emergency of domestic obstetrics and surgery.

The essentials are everyday articles, viz., an awl, a wash-boiler, a string, washing soda, water and a fire. Through the flange of the boiler cover, at each of the four rounded corners and at the sides, punch a hole, in such a manner that it will be closed in by the boiler rim when the cover is in place. Through each hole pass a string. To sterilize heavy bed linen, sheets, etc., make a criss-cross network over the fabrics after packing the cover in the inverted position: put your instruments in the boiler itself, cover them with six inches of water, add one heaping tablespoonful of washing soda, put on the cover, place the whole on a gas, kerosene or other stove and boil hard ten minutes. Then extinguish the flame or remove the apparatus from the fire and set it aside to cool.

There is a distinct germicidal advantage in commencing operations with cool water and in letting the lowering of temperature after sterilization take place quite gradually. When the cover is finally lifted, it is a sterile tray and should be stood bottom upward upon a convenient table, the strings should be severed, but its contents should be allowed to rest undisturbed until each is required.

In the absence of an awl the perforations may be easily made with the household shears.

Experiments have given thermo-metric readings of 100, 100⅕ and 101 on three successive trials. The instrument in use was a centigrade tested accurately in boiling water. It seems curious that temperatures above the boiling point of water can be obtained, but they can be.

A sheet was folded as compactly as possible enfolding the thermometer in "its midst" and both were carefully wrapped in a large linen towel. A cord bound the whole together in order to make the bundle as resistant to steam penetration as it possibly could be made under actual service conditions. It was quickly and easily demonstrated that the common pressure in the ordinary wash-boiler is sufficient to raise the temperature of its confined steam a full degree above the boiling point of water, *i.e.*, to 101° C. The liquid contents make an aseptic washing fluid, but one must keep vaseline and grease out of them when boiling.

A (P. and S.) student, who has been much interested in my "laundry work," suggests that "the punctures should be made through the descending perpendicular plate of the cover approximating its inferior border. Thus the water vapor may be more conserved."

I agree with his opinion in another matter, viz., "If some tired surgeon undertakes to clean oily instruments by a final boiling he will think of anarchy and dynamite." Boiled out water covered by a layer of oil may be raised to about 120° C., when it suddenly boils with almost explosive violence. Kitchen demonstration of this experiment is not desirable; a vacant lot furnishes more chances of escape.

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MEDICAL PROGRESS.

MEDICINE.

Temperature after Splenectomy.—A series of very interesting observations were afforded by a patient who developed a pneumonia several months after the spleen had been extirpated on account of the presence of a neoplasm. In reporting the case, W. v. Moraczewski (Berl. klin. Woch., Nov. 2, 1903) shows that aside from the changes in the blood, the course of the temperature did not vary from that in a normal person. The phenomenon most worthy of note was the connection between the increase in the blood cells and the excretion of phosphorus in the urine. The maximum amount of phosphates was excreted during the period when the leucocytes were least in number. As the latter became more numerous, the percentage of phosphates became gradually reduced and remained so until the leucocytes reached 33,000 in number, when the phosphate excretion again reached the normal figure. At the same time there was a marked increase in the quantity of calcium salts excreted, and there was a sudden drop to the normal as soon as the leucocytes reached a normal number. The potassium salts varied in a manner similar to that of the phosphates. The author assumes that the reduction in the potassium and phosphate salts is due to their increased consumption by the growing white cells.

Value of Pentose as Food.—It has frequently been pointed out that pentose may be destined to play an important part as food, since it can be easily and cheaply manufactured from such waste-products as straw and sawdust. Former observations made it seem as if assimulation were particularly active during monition, but E. Bendix and K. Dredger (Deutsch. Arch. f. klin. Med., Vol. 78, Nos. 1 and 2) arrive at different conclusions. Examination of the urine showed that about two-thirds of the sugar is used up normally, but exactly the same figures were obtained with the same amount ingested after a period of fasting up to the appearance of acetone and diacetic acid in the urine. The conditions in chronic inanition may, however, be different than in acute hunger, and it is also desirable to experiment with different varieties of pentose, such as rhamnose and arabinose.

Studies upon Nephritis.—In a case of subacute nephritis, F. Erben (Zeitsch. f. klin. Med., Vol. 50, Nos. 5 and 6) found the number of red and white cells nearly normal. The variations present were chiefly of a chemical nature, thus the albumin was considerably diminished in the plasma, the globulin slightly increased, cholesterin and water and alcohol-soluble extractives diminished in both cells and plasma, phosphate and magnesia subnormal and lime above normal in the plasma-ash, while the cell ash was normal. In chronic parenchymatous nephritis almost all the albumin in the serum was substituted by globulin with an increase of fibrin; the other changes were similar to those of subacute nephritis. In secondary contracted kidney, with amyloid degeneration, the globulin was also reduced, the fibrin increased, cholesterin and alcoholic extract diminished in the erythrocytes and increased in the serum, phosphates and potassium diminished, and sodium chloride

increased in both. In conclusion, the character of the albumin excreted by the kidneys was studied. The albumin itself did not correspond to the ingested albumin, but to cellular albumin, and the same was true of the globulin, though the large amount of this substance in the serum made it seem more probable that it was a pathological product excreted by the kidneys.

Delirium Cordis.—Six cases of rapid, arrhythmic heart-action coming on in attacks, have been observed by A. Hoffmann (Deutsch. Arch. f. klin. Med., Vol. 78, Nos. 1 and 2), who applies the name delirium cordis to this condition. The age of the patients varied from nine to fifty-eight years, the inciting cause which led to an attack was bodily exertion, excitement, or the excessive use of alcohol or tobacco. The heart may beat as fast as 300 times a minute; on examination there is no dilatation, the first and second sounds are very much alike, and murmurs are usually not heard. Slight irregularities are common, thus there may be an alternating pulse or a beat is dropped occasionally. Blood-pressure before, during and after the attack shows only slight change, the urine is often increased in quantity, and of low specific gravity, but free from albumin and sugar. Gastric and intestinal symptoms, fever, neuralgia and variations in the size of the pupils do not belong to the symptom-complex. A strange sign is the mobility of the apex; in all cases it moved 5 to 9 cm. outward when the left lateral position was assumed. The subjective symptoms usually only amount to a sensation of discomfort sometimes increased to pain, but the bodily functions hardly ever suffer. The prognosis is excellent. In some cases the attacks will cease at once if the patients lie down and breathe deeply or hold their breath in deep inspiration; in others, pressure on the vagus or stooping-down may be effectual. Alcohol, tobacco and severe exertion should be forbidden.

Influence of Environment on the Development of Tuberculosis.—By carefully studying the social condition of the patients of his dispensary, E. Schwarzkopf (Deutsch. Arch. f. klin. Med., Vol. 78, Nos. 1 and 2) could prove that constant contact with unclean tuberculous patients undoubtedly favors infection, even in those who are not otherwise predisposed. Almost every individual inhales virulent bacilli occasionally, but a rapidly repeated infection will overcome the natural barrier of persons with strong lungs. The danger thus stands in direct proportion to the number of patients in the neighborhood, and the duration of exposure. It is greatest between the fourteenth and fortieth years, and increases steadily up to the fortieth year. If tuberculous patients are sanitary in their habits, very little risk is incurred. In women, lactation and pregnancy are two important predisposing factors.

Experimental Fat Necrosis.—It is now considered settled that fat-necrosis is caused by the fat-splitting ferment of the pancreas, and that this fat necrosis is responsible for the necrosis of pancreatic tissue. As soon as the pancreatic juice comes into contact with the intra-pancreatic fatty tissue, the fat will be converted into soluble soap, which is soon changed into unsoluble soap by combining with the lime of blood and tissues. The etiology of cases of so-called apoplexy of the pancreas has long been obscure, but a very satisfactory explanation is given by O. Hess (Münch. med. Woch., Nov. 3, 1903). This writer finds that if a sufficient amount of fat is injected into the excretory duct of the pancreas, total necrosis of this organ, fat necrosis and hemorrhage ending in death will follow. The symptoms correspond to those of apoplexy in every way. The same results were obtained with sodium soap, but glycerin, paraffin oil and starch-paste proved absolutely harmless. The frequent combination of fat necrosis with cholelithiasis makes it probable that the common bile duct is dilated by former gall-stones, thus permitting the fatty contents of the duodenum to enter the pancreatic duct where lesions similar to those obtained in the animal experiments are set up. Why death should be so sudden is not quite clear, but it is possible that an acute soap intoxication is responsible.

Some Rare Auscultatory Findings.—The Flint murmur at the apex has been observed repeatedly by L. Syllaba (Zeitsch. f. klin. Med., Vol. 50, Nos. 5 and 6), and is not considered by him of such rare occurrence. It varies considerably in strength in each case, and may even disappear for a time. A mitral stenosis may thus be diagnosed on one occasion and an aortic insufficiency on another. In doubtful cases the diagnosis can generally be cleared up by giving digitalis when the murmur and fremissement disappear. The murmur is best explained by an inversion of the aortic flap of the mitral valve, due to the regurgitation of the blood, so that the orifice is narrowed. The prognosis is not more serious, though the patients often suffer more than uncomplicated cases. In a number of patients of advanced years the author discovered a systolic murmur at the apex without evidences of endocarditis, but instead, an arteriosclerosis or nephritis. The murmur may be functional and inconstant, or organic and permanent; in the former case there is irregular action of the papillary muscles or dilatation of the ventricle; in the latter, an extension of the sclerotic process upon the valve. A gallop rhythm frequently complicates the condition. It may be very difficult to decide in such cases between endocarditis, with congestion of the kidneys, and nephritis, with involvement of the heart, but a conclusion can often be arrived at by the condition of pulse, urine and blood-pressure, the size of the heart, the strength of the second sounds over aorta and pulmonary artery and the history. Another interesting lesion is the relative insufficiency of the aortic valves found in old people owing to arteriosclerotic shrinkage of the valves or dilatation of the beginning of the aorta. The clinical symptoms are those of an aortic insufficiency, but the murmur is somewhat different; it is postdiastolic and very short and feeble. These patients frequently die suddenly of syncope. Sometimes only one of the three flaps is retracted, at other times there is only a relative insufficiency, and then the murmur is liable to be inconstant. A murmur of little significance is sometimes heard in old, healthy people during the second half of inspiration over the upper portion of the sternum. It is rough and consists of two or three separate sounds, each synchronous with cardiac systole. A roughening of the adventitia of the large vessels at their origin is assumed, but as yet no autopsy findings have borne out this view. Pseudopericardial murmurs may be due to extrapericardial pleurisy, they are rough, heard best along the left margin of the lung, and are synchronous both with respiration and cardiac action. With forced respiration, they impose as pleural, with superficial respiration as pericardial sounds. A second group is less common and depends on serofibrinous perihepatitis, and a third upon right mediastinal pleuritis. These latter cases do not make the impression of being very ill, and the murmurs resemble those of insufficiency and stenosis of the aorta, but do not replace the normal sounds, and are clearly influenced by respiration, though they do not disappear entirely when the patient stops breathing. In severe chlorosis, venous hums sometimes impose as murmurs of aortic stenosis and insufficiency, since they may become louder with every systole. They can, however, be traced upward along the right jugular vein, where they become continuous. Closely allied are certain diastolic sounds sometimes heard over the pulmonic

vein in pernicious anemia. Cardiopneumatic sounds are due to an aspiration of air during every cardiac movement into that part of the lung lying upon the heart. The patients are generally neurasthenics, and much excited during examination; the murmur is heard over the third or fourth left interspace, and is most often systolic in tune. The character of the sound is characteristic and unmistakable.

SURGERY.

Selection of Anesthetic for Children.—Although chloroform is considered to be more dangerous than ether in adults its use in children has been very generally recommended because of the belief that children were practically immune to the bad effects of chloroform. S. J. Kopetzky (Med. Rec., Oct. 3, 1903) believes that chloroform is dangerous because an overdose may be too easily given and his contentions are borne out by many men who have had occasion to give it in a large number of cases. Cardiac failure may set in at the very beginning of the anesthesia, because of the violent and dangerous struggle which takes place in frightened children. Death occurs suddenly and without warning. The tendency to push the anesthetic is too tempting especially when the patient is afraid and struggling. Cardiac syncope following vomiting may occur at any time during or after the administration of chloroform and result fatally. He particularly warns against the practice of beginning operation before complete anesthesia and also against the use of chloroform in the upright position.

Intestinal Anastomosis by the Elastic Ligature.—The application of the elastic ligature as a means of producing an intestinal anastomosis is a very simple procedure says T. A. McGraw (Am. Gyn., Sept., 1903). The two viscera are brought together and the surgeon connects them with a single line of Lembert sutures a little longer than the desired opening. The rubber cord is then by means of a large needle, passed through the wall of first one and then the other bowel and tied firmly with a single knot. Before tying it, however, a silk thread is laid under the knot, and, after the knot has been firmly tied with the rubber stretched to its uttermost, the silk thread is made to fasten it in place. Both threads are then cut short and the Lembert suture is now completed so as to form a ring to enclose the suture of rubber. In passing the rubber through the gut it should be put on the stretch in order to lessen the size, and drawn slowly and carefully through in order not to tear the gut. The advantages of the procedure are (1) its simplicity and quickness of application; (2) its aseptic quality, for the rubber fills the openings through which it passes so completely that no extravasation is possible; (3) the delay in opening the passage until the intestines have become well glued together; and fourth, the ability to make with it a communication of any desired length. Compared with the Murphy button it is less liable to meet with disaster from faulty technic, causes no loss of blood, is more aseptic and it leaves no foreign body in the bowel.

Thyroid Fistulæ.—An interesting and complete study of this subject has been made by E. Payr (Archiv f. klin. Chir., Vol. 71, No. 2), from which he concludes that fistulæ following goiter are comparatively rare when the large number of other diseases of the thyroid gland are considered. Under certain circumstances any factor which produces a strumitis or a thyroiditis may also result in the formation of a goiter fistula and in exceptional instances it may be caused by parasites or neoplasms of the thyroid. Among the conditions which interfere with the closure of a fistula in this locality are tissue necroses after infectious processes, chalky concretions in the cavity, and calcification or sclerosis of the walls; in the latter case the insufficient vascular supply does not permit of the ready growth of granulation tissue. He divides these fistulæ into internal and external, the latter being extremely rare. The diagnosis is especially difficult where the diseased thyroid occupies a retrosternal position, or where there is an accessory thyroid. In such cases probing combined with the use of the X-rays may prove an efficient help. Treatment should consist in all cases of fistulæ following strumitis, on account of the dangerous complications, of complete extirpation, together with the focus of the disease and the lobe of the gland which is involved.

Hyperesthesia in Appendicitis.—A phase of appendicitis which has hitherto been neglected is the behavior of the skin toward sensation. A noteworthy fact has been brought out by J. Peiser (Münch. med. Woch., Oct. 13, 1903), namely that in the majority of cases sensibility is reduced in the right iliac region in an ill-defined area which does not admit of any characteristic figures. In one case there was hyperesthesia and in another, this developed later. The writer recommends increased observation on this phenomenon as its constancy and its relation to the pathological condition of the appendix may aid in diagnosing obscure cases.

Disadvantages of the Trendelenburg Position.—The few objections already advanced have been added to by P. Kraske (Archiv f. klin. Chir., Vol. 71, No. 2) as the results of personal experience. He does not wish to decry the procedure and admits its great value in many cases, but advises caution in certain patients. Among these are individuals who present a weakened condition of the heart muscle as the result of degenerative changes. Here the overdistention of the heart and the increased pressure of the column of blood in the inferior vena cava, may lead to an acute irreparable cardiac dilatation. In cases where there is an extensive deposit of adipose tissue in the omentum, the mesentery and the appendices epiploicæ, a permanent displacement of the intestines may take place, resulting perhaps in intestinal occlusion. Possibly under such circumstances the pressure of the weighted intestines against the under surface of the liver may produce congestion in the portal vein and its branches and also congestion and hemorrhages in the gastric mucosa. He believes that this fact affords an explanation of those cases where gastric hemorrhages have been observed soon after operation. In corpulent persons the author advises limiting the Trendelenburg position to as brief a time as possible. After the operation is completed the patient should then be placed in an elevated position for a time and all compressing abdominal bandages avoided.

Improved Narcosis.—There is a decided advantage in using a mixture of chloroform and ether instead of either pure drug as the dangers of pneumonia and cardiac paralysis are much minimized. P. Krönig (Münch. med. Woch., Oct. 20, 1903) finds, however, that it often requires fifteen to thirty minutes before anesthesia is sufficiently deep for laparotomy. He has, therefore, constructed an apparatus similar to a Bennet inhaler with which narcosis may be begun with laughing gas and then continued with ether and chloroform. The operation can usually be begun in four to five minutes and accidents were never observed.

Blood Examinations in Abdominal Diseases.—Probably leucocytosis instead of being an absolute and infallible indication of the presence of pus, is a sign of very great value of the existence of toxemia. C. J. N. Longridge (Lancet, Oct. 24, 1903) reaches these conclusions from a study of a large number of cases at St. George's Hospital. He believes that it is not possible

at present to fix any definite relationship between the amount of the leucocytosis and the intensity of the toxemia, but the broad fact remains that an increasing leucocytosis is the most scientific and accurate measure for gauging the increased virulence of an appendicular or kindred infection. On the other hand, a decreasing leucocytosis is an evidence of decreasing virulence or walling off of the toxic products. He agrees with DaCosta that the blood count in appendicitis is not a pathognomonic sign, but that it is of value for routine clinical surgery.

Perforation of the Colon by Small Foreign Bodies.—The list of materials grouped under this term—foreign body—is much broader than is usually realized. Many of them are metallic, derived from the metal instruments employed in preparing food, or from the pans and pots used in cooking it. Fragments of bone from the smaller vertebrates are frequently indigested and passed into the colon. These types of foreign bodies are more known than those accidentally swallowed and usually considered as such. J. Bland Sutton (Lancet, Oct. 24, 1903) states that this may be of profound surgical importance, especially when the perforations are in close relation to an epiploic appendage. Needless to state that the vast proportion of those ingested are as easily egested, but the frequency of anal abscess serves to show that a small proportion at any rate does not make so fortuitous an exit. The appendix epiploica is anatomically a fold of peritoneum filled with fat, its size depending on the amount of fat. It is easy to show that the serus investment of the colon reposes on a subserous tissue containing varying proportions of fat throughout that part of the circumference of the gut which receives the peritoneal investment. It is thus clear that there are portions of the circumference of the colon where a sharp foreign body could penetrate and escape into the general peritoneal cavity, and the thinner the person, the greater the arc of the gut which would allow this form of penetration. In a fat person, on the other hand, there is a far greater extent of its circumference so protected by fat, into which the escaping body would be more probable to find its way and occasionally lodge in the appendix epiploica. The fatter the patient, the less likely is the foreign body to penetrate the general cavity, and the greater the chance of epiploic involvement. It is conservative to state that in some instances at least the cause of the tumors of the abdomen which disappear spontaneously after operation is a minute foreign body which has perforated the cecum, the colon, the sigmoid or the rectum. The manipulation of the parts at the time of operation serves to dislodge the foreign body and admit of evacuation and disappearance of the tumor. Thus Bland Sutton explains some of the perplexities of spontaneous disappearance of solid abdominal tumors often supposed to be malignant, in which the patient has lived to mock his advisors.

New Method of Intestinal Union.—Mayo-Robson in his masterly work upon the intestines, has left a markedly favorable predisposition in the mind of the British surgeon toward the "bobbin." Alexander McLenan (Lancet, Oct. 24, 1903) introduces his article by showing two microphotographs which are intended to compare his method with the results obtained by the Czerney-Lembert technic. The latter shows in a marked degree the annular shelving stricture, which is gratifyingly absent from the "bobbin" and ring anastomosis. The bobbins, some of which have been made of formalin—hardened gelatin rather than decalcified bone—are slightly conical. This is of distinct advantage, because when inserted, the small end of the cone is placed toward the stomach and therefore it is very unlikely that particles of food, which have once entered, will lodge in the canal. After the bobbin is placed in situ, a light umbrella ring is slipped over it to hold the gut in place. Sutures may be put in at the junction of the peritoneal surfaces, but are not to be recommended, as they lead to adhesions.

Diagnosis of Tuberculosis in Bones and Joints.—By means of an extensive series of X-ray pictures of the knee-joint, K. Ludloff (Archiv. f. klin. Chir., Vol. 71, No. 3) has compiled a number of rules by which he believes that the diseased can be differentiated from the well joint. These pictures are taken in two directions—from before backward, and from the side. The characteristic points in a tuberculous knee are (1) the diminution and finally the disappearance of the protuberances at the line of junction of the bone and cartilage, especially at the internal condyle, up to the fifth year, and the presence of rough surfaces at this junction up to the seventh year; (2) new bone formation in the shape of small conical projections on the under surface of the condyles; (3) enlargement of the ossified parts of the condyles, the patella, the tibia and the head of the fibula—appearing as if dilated; (4) enlargement of the epiphyseal center and its more ready permeability by the X-ray. These appearances are no doubt caused by the localization of the tuberculous process near the junction between the bone and cartilage in the region of the ossification center of the internal condyle. It is impossible to say, however, whether this is the primary focus of the disease.

Antiseptic Wound Dressings.—The value of the dry and moist dressings on a wound has been made the subject of animal experiments by W. Noetzel (Archiv f. klin. Chir., Vol. 71, No. 1), in order to determine their relative merits. It was found that a dry, as well as moist gauze dressing (which was allowed to dry) was able to absorb tetanus bacilli placed on a muscle wound in a rabbit in such a thorough manner that the animal did not become infected with the disease. The more marked capillary drainage present in the moist dressings is shown by the fact that the bacilli penetrated the outermost layers of the latter, whereas only the inner layers of the dry dressing contained bacilli. Gauze moistened with bichloride solution was found to have inhibited the growth not only of the tetanus germs, but also those which had been derived from the surrounding skin. Eczema due to the sublimate gauze is not as frequent a complication according to this author. In order to be certain of avoiding it he recommends painting the vicinity of the wound with dermatol made into a paste with sterile water.

Operative Interference in Gun-shot Wounds of the Abdominal Cavity.—It is the opinion of the majority of surgeons that gun-shot wounds require operative interference, and expectant treatment has in the majority of cases been followed by fatal, or at least untoward results. B. K. Tinkelstein (Roussky Vrach, Sept. 27, 1903) bases his article on the results obtained in six cases, four of which were operated on. In the first case a man of twenty years received a pistol wound in the abdomen. As operation was refused and patient felt comparatively well, he was given morphine, ice on the abdomen, and an aseptic bandage applied. On the next day, however, there was vomiting (twice), pain at the point of entrance of the bullet, tenderness of the abdomen, pulse 120, and temperature 38.5° F. The condition became worse the following day, the abdomen became extremely painful, pulse normal; fatal issue at midnight. In this case the bullet entered under the lower border of the right kidney, penetrated through both walls of the intestine, while the peritoneum showed general inflammation. In the second case the point of entrance

was three fingers below the unbilicus, and two to the left of the median line. Immediate laparotomy was performed, and the peritoneum was found to have been penetrated by the bullet. Two intestinal wounds were detected and closed by Czerny-Lambert sutures. The bullet could not be found. Recovery uneventful. A somewhat similar case, though of greater severity, was operated on with similar favorable results. The other cases are of the same character, except the sixth, in which no operation could be performed, with the result that the patient died; and this, notwithstanding the fact that in both the first and the sixth case the author had to do with young people, of good general condition, who were given the best possible medical attendance; besides the involvement of the peritoneum was apparently not sufficiently extensive or severe to cause death; and it is quite probable that operative interference would have saved both patients. The favorable issue following operation is especially important in two of the cases, where there were multiple wounds of the intestines and the mesentery; and the author entertains no doubt as to certainty of death in both cases, if not for his interference. The bullet was not found in either of the cases, having probably become embedded in the muscles of the spine. In one case in which the stomach was severely injured operation failed to save the patient. We must, however, add that in this case both the liver and the pancreas were wounded, and death was due to a severe peritonitis.

Aneurism of the Hepatic Artery Treated by Ligation.—H. Kehr (Münch. med. Woch., Oct. 27, 1903) reviews the literature of hepatic aneurism, and finds that of the 22 cases published, only 3 were treated surgically. Since these were all fatal, his case is the first successful one on record. The symptoms were those of cholelithiasis, with gastric or duodenal ulcer, since the aneurism had ruptured into the gall-bladder from where the blood found its way into the stomach and intestines. The patient was anemic and in very bad condition, but his life was probably saved by a firm clot which had formed in the cystic duct and which was probably responsible for the attacks of colic. A pulsating tumor could not be felt through the abdominal walls. The operation was rendered difficult by an enormous hemorrhage. After the ligature had been applied, the sac was freely incised and proved to be the size of a goose egg. Owing to the large number of collaterals which had formed during the two years the patient had been complaining, the outcome was favorable. The cause of the aneurism was entirely obscure in this case, since there was no history of lues, arteriosclerosis, cholelithiasis or trauma. Where the sac ruptures into the abdominal cavity, death is so sudden that an aneurism is often not suspected, but in other cases, a diagnosis will often be possible. The occurrence of a marked anemia and of hematemesis and intestinal hemorrhage, accompanied by biliary colic and jaundice, is highly suggestive. It may be possible to fill the gall-bladder, but the aneurism is generally seated too deeply to be palpated. It must not be forgotten, however, that gastric hemorrhages may also occur in cholelithiasis, due to the general cholemic diathesis, acute portal thrombosis or ulceration of stomach or intestine. Conversely, a duodenal ulcer may be complicated by cholelithiasis, owing to kinking of the cystic duct, from periduodenal adhesions. The only rational treatment for aneurism can be ligation, for though physiologists state that the hepatic artery is indispensable for the nourishment of the liver and its vessels, sufficient collaterals have generally formed to prevent a necrosis. If the aneurism involves only one branch, this alone should be tied, especially since it is comparatively easy to isolate the artery. The sac should be tamponed with sterile gauze and the gall-bladder may be removed.

PHYSIOLOGY.

Subcutaneous Nutrition.—For the purpose of determining whether certain albuminoid substances could be injected subcutaneously, without the unpleasant sequelæ attending the injection of the ordinary albumin or albumoses (peptones), a series of animal experiments have been undertaken by Trolldenier (Berl. klin. Woch., Oct. 5, 1903). The albumin was in solution and in the form of an intermediate product between true albumin and the ordinary commercial peptone. It was assumed that the more nearly the material approached the natural, unchanged albumin, the more readily could it be employed to furnish a substitute for the albumin in the body. The experiments were made in dogs, a 10-per-cent. solution of the material being injected subcutaneously, in doses of from 50 to 100 c.c., under strict aseptic precautions. These experiments showed that the albumin was not excreted with the urine and the dog in sixteen days increased 0.5 kgr. in weight. The only difficulty seemed to be the development of painful abscesses at the site of injection, due to the slow absorption of the material injected. These, however, healed readily, and did not interfere with the good condition of the animal. Further experiments were made until a solution was finally obtained, which contained 8 per cent. of the intermediate products mentioned, and also 0.6 per cent. of cooking salt. This was also employed in two human subjects, and a number of dogs with much better success, causing only a slight swelling which soon subsided.

Physiology of the Pineal Gland.—In a previous investigation of the functions of the hypophysis, E. v. Cyon (Pflüger's Archiv, Vol. 98, Nos. 7 and 8) believed that the pineal gland shared with the hypophysis the power of mechanically regulating the quantity of cerebrospinal fluid in the ventricles of the brain. In order to make a complete study of the chemical, as well as the mechanical aspects of the subject, the author first experimented with extracts of the pineal body. The intravenous injection of large doses of the latter diminish the rate and increase the force of the heart-beat, and cause the appearance of the irregularities known as the bigeminus and trigeminus pulses. These changes depend on stimulation of the central ends of the vagus. The question arose whether these changes represent physiological actions of the pineal gland or are to be attributed to the action of the inorganic substances that are found in large quantity in the pineal body under the form of concrements. The author finds that there is no ground to suppose that the pineal extracts are an exception to the other extracts that act favorably upon the heart and blood-vessels. A series of experiments were made directly upon the gland itself. The lightest contact of electrode connected with an inductorium having a current of 5 volts in the primary coil, produced a slight change in the form of the gland. This change consisted in a shrinking of the glandular tissues with a slight shifting of the gland as a whole. What is the physiological significance of these changes? The situation of the pineal gland in the path of the aqueductus sylvii, near the mouth of the third ventricle, suggested the hypothesis that a contraction accompanied by a shifting of the gland, would serve to regulate the flow of cerebrospinal fluid to and from the third ventricle. The pineal gland would, therefore, play a mechanical rôle, controlling the flow of cerebrospinal fluid in the aqueductus sylvii, and according to the pressure imparted thereby to the fluid in the third ventricle,

to cause a dilatation or contraction of this cavity. This hypothesis is strengthened by the discovery made by N. Nicolas that the pineal gland contains striated muscle fiber. The fact that animals from which the hypophysis has been carefully removed, and human beings suffering from tumors of the hypophysis, soon succumb with manifestations of increased intercranial pressure (coma, vapor, etc.), seem to indicate the mechanism of the pineal body is entirely depending for its perfection upon that of the hypophysis, or that the latter is not alone capable of fully warding off excessive intercranial pressure.

Anatomico-physiological Significance of the Muscularis Mucosæ.—The interesting fact was established by A Exner, according to Bianca Bienenfeld (Pflüger's Archiv, Vol. 98, Nos. 7 and 8), that the muscularis mucosæ of the intestinal canal prevents the entrance of foreign bodies into the mucous membrane. It is indeed very remarkable that frequently sharp foreign bodies pass through the alimentary canal without causing any wounds, in spite of the fact that with certain animals, as with beasts and birds of prey, the repeated swallowing of sharp bones is a daily occurrence. In a series of comparative anatomical researches the author, a student of medicine, found that the muscularis mucosæ of the stomach and of the upper part of the small intestine is much more distinctly developed in animals, whose alimentary canal is exposed to injury from sharp foreign bodies, than in those feeding upon a soft kind of food. In the lower part of the small intestine and in the large intestine, this thickening—a species of compensatory hypertrophy—is not evident. In general, the muscularis mucosæ decreases in thickness from the stomach to the large intestine. This is to be attributed to the fact that sharp bodies, such as fish-grates, in their course through the alimentary canal, are partly softened and blunted by the digestive secretions, and are also enclosed in firm scybala.

Influence of Bodily Exercise upon the Healthy Pulse-rate.—A large number of determinations of the frequency of the pulse made upon individuals in good health after certain forms of exercise, by F. Tewildt (Pflüger's Archiv, Vol. 98, Nos. 7 and 8), show that the acceleration is not so much dependent upon the duration of exercise as upon the speed with which it is performed. A moderate but long-continued exercise increases the frequency of the heart-beat to a much less degree than a series of movements very rapidly performed, which may at times double the frequency of the pulse. Daily observation shows that this law does not hold with cases whose circulatory apparatus is no longer intact, in whom excessive exercise may cause irreparable damage, not seldom resulting in death.

Rôle of Pancreas and Muscle in Burning Carbohydrates.—It is now known that the burning of large quantities of grape-sugar in the muscles, is brought about by the action of a ferment, according to O. Cohnheim (Hoppe-Seyler's Zeitsch., Sept. 3, 1903). Moreover, the discovery of pancreas-diabetes has indicated that in the higher animals the pancreas plays a decisive rôle in the metabolism of sugar. It secretes a substance whose absence from the blood renders the oxidation of sugar impossible. The search for a glycolytic ferment in the pancreas has not yet been rewarded with success. The author sought to combine both organs, namely, muscle and pancreas, and to prove whether they cooperate to produce a glycolytic ferment. This he found to be the case. From admixture of muscle and pancreas, a non-cellular fluid may be obtained, which, in the presence of grape-sugar, changes it so that it loses its reducing power. The two organs separately cannot do this. It would, therefore, appear that in order that grape-sugar may be oxidized in the organism, the cooperation of muscle and pancreas is necessary. Since the catabolism of sugar takes place in a homogeneous fluid outside of the cells, it must be the result of some ferment-action. This process may be analogous, either with the fact discovered by Ehrlich that for the accomplishment of lysin-action, complement and intermediate body are necessary, or with the condition discovered by Pawlow, namely, that the trypsinogen of the pancreas is made active only by the enterokinase secreted by the intestinal mucosa. The teleology of such a cooperation can easily be explained. The burning of sugar must take place in the muscles, since in them the resulting energy is utilized. But in the fluid contents of the muscle, the glycolytic enzyme cannot be separated from the sugar. Hence a provision must be had for making the enzyme active only when the energy is demanded. This provision is furnished by the internal secretion of the pancreas.

Reverse Action of Proteolytic Enzymes.—In 1895 itwas discovered, according to R. O. Herzog (Hoppe-Seyler's Zeitsch., Sept. 3, 1903), that the addition of pepsin, trypsin or papayotin to concentrated solutions of albumoses, caused the formation of a flocculent or jelly-like precipitate. This phenomenon was termed plastein-formation. The recent experimental proofs of the synthetic powers of ferments suggest that the formation of plastein is also to be considered the result of a synthesis of the split products of proteolytic ferments. The question arose whether the substance "pepsin" is not a mixture of the ordinary peptic enzyme and one that results in the formation of plastein. The author, by means of a series of physicochemical researches, has proved that the proteolytic enzymes are indeed capable of a reverse action. Recently E. J. Spriggs has shown that during the course of the peptic digestion of albumen, the viscosity of the latter diminishes at first rapidly and later slowly. The author finds that in the presence of the proteolytic enzymes, concentrated solutions of albuminoses increase in viscosity. In this connection it is necessary to refer to the interesting fact discovered last year by Weinland, namely, that the juices expressed from intestinal worms, such as *Ascaris lumbricoides*, contain an antiferment, counteracting the action of pepsin. This, of course, protects the parasite from proteolytic dissolution. The author used this phenomenon as a test of the reversionary power of the proteolytic ferments, for if the splitting and the synthetic action of the latter enzymes be attributed to the same cause, then any agent, such as the antiferment of *Ascaris*, that inhibits the one would also inhibit the other function. This is found to be the case. The increase of viscosity above mentioned is inhibited by the addition of the juice of *Ascaris* and, indeed, to the same degree as the viscosity is reduced during the hydrolytic action of the ferments. This regular increasing viscosity is considered by the author as a proof of the reversion hypothesis.

Physiological Relations of Glycerin.—This substance is found normally in the blood in very small quantities, according to M. Nicloux (Jour. de Physiol. et de Path. Gén., Oct. 15, 1903). This quantity is not influenced by the condition of fasting nor by a diet rich in fats. After the intravenous injection of glycerin this substance is rapidly excreted in the urine. It appears that the renal epitheluim exerts a powerful selective action on glycerin.

The Iron-content of the Animal Body.—A new determination of the iron-content in the various tissues was made by M. Schmey (Hoppe-Seyler's Zeitsch., Sept. 3, 1903), with certain interesting results. A review of the classical investigations on the proportion of iron in

the various foodstuffs reveals the fact that of all nutrients, the more important ones have a larger iron-content than milk. A priori, the opposite would have been expected, inasmuch as milk forms at first the only nourishment for the growing animal, which, for the building up of the iron-holding organs and tissues, requires more iron than the adult animal. The paucity of the quantity of iron in milk is all the more surprising, inasmuch as all the other inorganic constituents are present in this medium in exactly the same proportion as they are required by the nursling; but the latter requires only one-sixth of the amount of each of these inorganic constituents furnished. All the rest is wasted. In the case of iron, this extravagant expenditure on the part of the maternal organism is not found. The solution of this apparent contradiction is found in the fact that at birth the nursling possesses in store for future use a large supply of iron. In fact, the amount of iron in the entire organism is proportionately greatest at birth, and gradually decreases with the growth of the animal. The microchemical researches of Macallum have shown that ingested iron is absorbed by the epithelium of the small intestine. Abderhalden proved that a diet containing an excess of inorganic and organic iron, causes a deposition of this substance in the duodenum, in the rest of the small intestine in the solitary follicles and Peyer's patches, and next in order, in the cecum, large intestine, mesenteric nodes, liver, spleen, and least of all, in the muscles. The question arose in the author's mind, whether other organs possess this capacity for storing up iron, particularly the muscles, which by virtue of their great total bulk, may store up a large quantity of this element. He finds that this is really the case, and also that the cardiac muscle is, without exception, richer in iron than the rest of the musculature.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Origin of the Alexines.—A series of researches in the factors that lie at the base of natural immunity, was made by R. Turro (Journal de Physiol. et de Pathol. Gén., Sept. 15, 1903), with the following results: The alexines are substances that act upon the bacterial protoplasm, dissolving it or changing it into an amorphous material. To this process may be given the name bacteriolysis. The alexines originate in the cellular plasmas; those that are furnished by the phagocytes and the macrophages, are called cystases. The properties of the alexines vary according to the source. Some are active and others inactive, with respect to particular bacteria. Chemically considered, the alexines are enzymes that digest the bacteria by means of a progressive hydrolysis. This conception indicates the powerful means by which the organism protects itself against infection. The cellular juices are capable of elaborating an almost inexhaustible quantity of alexines. An alexine obtained from the spleen is capable of digesting 20 to 30 times its weight of the *Bacillus anthracis*. These enzymes may remain potential or inactive, if there are no adequate means for their solution and diffusion in the blood and lymph. The discovery of the intimate mechanism by means of which the alexines are formed and acquire the expansive force which distributes them easily throughout the body, will furnish the solution of the problem of natural immunity, whose process is intimately bound up with the nutrition of the cell, under its double aspect of assimilation and disassimilation.

Disseminated Diphtheritic Gangrene of the Skin.—In the case of a male adult not primarily suffering from diphtheritic angina, R. Bernard and O. Jacob (Arch. de Méd. Expér., Sept., 1903), observed the condition of disseminated cutaneous gangrene. This proved to be, on microscopic examination, a condition caused by the bacillus of Loeffler, probably aided by a polymicrobic symbiosis. From the clinical standpoint one may consider that disseminated cutaneous gangrene is an atypical form of diphtheria, having no peculiar symptomatology, and whose diagnosis is a bacteriological one. In the case reported, the repeated injections of the antitoxic serum were followed by a cure.

Typhoid Fever and a Diplococcus.—In the course of and during the convalescence from certain cases of typhoid fever, there have been observed by H. Leroux and M. Lorrain (Arch. de Méd. Expér., Sept., 1903), certain serious complications, characterized by vomiting and polymorphic erythemas, of an epidemic character. These accidents are not caused by the typhoid bacillus, but are the result of an additional infection, whose pathogenic agent in the cases observed, appears to be a diplococcus analogous to the *Diplococcus hemophilus* described by Deguy in metadiphtheritic infections, and resembling in certain features the enterococcus of Thiercelin.

Toxic Power of Blood Serum.—The blood serum of the deer was used in a series of experiments by A. Sclavo (Archives Ital. de Biol., Sept. 10, 1903), to determine its toxicity in various animals under different conditions. Injected intravenously in rabbits, it was markedly toxic, but was less so when injected under their skin, in which case it produced an extensive gelatinous edema at the point of injection. The temperature of 55° C. destroyed the toxicity of the serum at the end of three hours, and markedly reduced it at the end of fifteen minutes. An exposure to the air for fifteen days destroys the toxic power. This is also equally diminished in contact with ether or chloroform. The toxicity is not affected by filtration through a Berkefeld filter. The serum of the deer has a marked destructive effect in the red blood cells of various animals. This serum after having lost its toxicity by heating to 55° C., does not regain it by the addition of other fresh serum; consequently, the toxic constituents present in its natural state correspond to certain bacterial toxins rather than to the hemolysines. By means of small doses of the fresh serum, or even by means of the serum rendered innocuous by heating, it is possible to strongly increase the resistance of rabbits to the strongest doses of the serum. The serum of these animals, thus fortified, will protect other normal rabbits against the serum of the deer, whether the former be injected directly into the veins, or be mixed in the test-tube with the deer's serum about to be administered. Rabbits which have been made capable of supporting large doses of the deer's serum, are also capable of withstanding a dose of the serum of the ox greatly in excess of the dose fatal in a control animal. This fact lends support to the view that the toxic substances met with in the blood of various mammals, if not identical, are at least closely related.

Experimental Tuberculosis.—Goats, oxen and horses are found by J. De Haan (Virchow's Archiv, Vol. 174, No. 1) capable of being rendered tuberculous by means of pure cultures of tubercle bacilli obtained from sputum, provided the animals are in poor condition. Macroscopically and microscopically the lesions are identical with those of tuberculous animals of Europe. There seems to be no racial immunity, and the infrequency of tuberculosis is to be ascribed to favorable environment. The monkey was found to be very susceptible. In all infected animals the lungs and bronchial lymph-nodes were involved, with or without tuberculosis of the mesenteric lymph-nodes. The intestines were generally intact.

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SANITARY DEVELOPMENT OF STREET CLEANING.

In the paper read before the New York Academy of Medicine on Thursday, December 3, 1903, Dr. Woodbury, the Commissioner of the Street-Cleaning Department of the municipal government of Greater New York showed very forcibly how much a physician can accomplish in the work of organizing and directing this important branch of city government. The improvements that have been introduced in the department's methods as the result of his term of office will undoubtedly prove the basis for a street-cleaning department in New York that will eventually prove a model for the world. There is no doubt that Dr. Woodbury has exhibited thoroughly progressive views in the matter, and has begun, as far as his short term of office would allow, the introduction of improvements that make street cleaning not a haphazard expenditure of the appropriation allowed for the purpose, but a definite organization of the disposal of city waste in such a way as to secure the best results with the least expenditure to the municipality.

It has long been known that the waste material of a great city was extremely valuable and that under proper conditions the collection and disposal of it might very well be made not only to pay for itself but actually to leave a surplus of revenue. So far there has been apparently very little thought of possible applications of this principle in the disposal of the extremely valuable waste of New York City. Now there has been a beginning of it. The ashes are being used for filling in near one of the islands in the harbor and already nearly one hundred acres of valuable land have been reclaimed from the water. This of itself constitutes an excellent financial showing. After small beginnings, in scarcely more than an experiment station, at least one good plant for the disposal of city rubbish has been constructed. In this it has been found that enough fuel is constantly being burned to supply an immense amount of valuable energy. This energy is now being used for lighting for another plant of the street-cleaning department, and may very well be further employed for city lighting purposes. Even the garbage is not entirely a source of expense, and street cleanings are being disposed of as manure, for which of course the material is very suitable.

A valuable element of Dr. Woodbury's work, however, is that especially which he has been able to accomplish because of his training as a physician. From the very beginning of his term he came to the realization that the open street markets for food materials in the crowded portions of the city on the lower East Side were a constant source of danger to the health of the city. Besides being a public nuisance because of the obstruction of the streets, they are a hindrance to the street-cleaning department's work for the reason of the crowds that constantly gather near them, and the source of very offensive littering of a quarter of the city already below standard in the matter of health. Underneath the new Williamsburg Bridge places were found for the fish market and other food product markets that formerly occupied places along the curbs in such crowded streets as Hester and Rivington. This change will undoubtedly be reflected in the mortality and morbidity records of the city in a very short time.

An important part of Dr. Woodbury's paper was taken up with the discussion of the number of microbes that occur in various portions of the city, and a stereoscopic demonstration of the bacteriology of the various districts which makes very clear the reason why the mortality should be so much higher on the lower East Side than it is on upper Fifth Avenue. Agar culture plates exposed for fifteen minutes in Hester Street give thousands of colonies of bacteria, while in the better residential quarter of the city the same ex-

posures result in, at most, a few scattered colonies, most of non-pathogenic and a few even more harmless molds. The necessity for thoroughly cleansing these crowded portions of the city and for making the index of the success of the street-cleaning department not quite so much the satisfaction of the dwellers on Fifth and Madison avenues, but the health statistics of crowded quarters, is very evident.

Dr. Woodbury has shown this new lesson in a very striking way. We congratulate him on the work that has been accomplished. We are elated to find that a physician should have shown such favorable possibilities for the practical organization and development of a great city department. The new city government now has a model before it that it cannot ignore without expense to popularity and the further evolution of the street-cleaning department into an, at least partially, self-supporting municipal bureau must be the criterion of the fitness of Dr. Woodbury's successor.

The demonstration of his fitness in a managerial capacity should prove the advisability of putting a physician in charge of the New York City Board of Health. There has been an impression that the laws of New York State forbade the appointment of a physician as the head of the department of health of this city. Even the President of the New York State Medical Association stated in his address at the recent annual meeting that a physician might be elected President of France but not of the New York City Board of Health. This was true under the old city charter but under the new charter, as stated by the counsel of the New York State Medical Association, in the December number of the journal of the Association, it is no longer true. We are in a time of specialism; and sanitary experts, known to be such, should be chosen as the heads of both the departments of health and of street cleaning.

AN OLD FRIEND IN NEW ROLES.

Ergot has long been one of the standard drugs, with whose use every medical practitioner was familiar at least in his obstetrical work. In recent years, however, the efficacy of the drug has been proven in a number of conditions and it would seem that it may be considered by the next generation of physicians as one of the most important substances in our therapeutic armamentarium.

At the recent meeting of the New York State Medical Association the employment of ergot was once more discussed in regard to its effect in alcoholism and in drug addictions of various kinds. A number of conservative observers have used ergot by hypodermic injection especially in alcoholic cases and have found it to give very satisfactory results. Surgeons especially did not hesitate to say that in surgical cases complicated by alcoholism no drug was equal to ergot in quieting the patient, preventing delirious complications, and restoring the individual to a restful condition.

The report of the experiences at Bellevue Hospital in New York seems to prove that ergot is of benefit even in the most advanced alcoholic conditions and under circumstances in which ordinarily there would appear to be very little hope of a favorable issue in the case. Dr. Alexander Lambert has found that in the so-called wet brain of alcoholics, an almost inevitably fatal condition, ergot given hypodermically proves life saving in a great many cases. Where formerly he was satisfied to save two or three out of thirty or forty patients, using all of the ordinarily recommended remedies, he now has but two or three deaths from this condition during his term of service.

This is, however, not the only purely medical field in which ergot has attracted attention in recent years. In cases of chronic malarial poisoning ergot has been found more satisfactory than even quinine for the prevention of the more serious symptoms. It has been found that when surgical operations are performed upon those who have previously suffered from severe malaria it is not unusual to have symptoms of malarial fever occur a few days after the operation. The disturbance of circulation incident to the operation seems to allow the escape of malarial parasites from the spleen where they had been stored. In these patients it has been found that the use of ergot for some time before an operation and shortly after it, inhibits and often prevents the development of malarial symptoms. In other cases of chronic malaria an end can be put to the recurrence of so-called attacks of dumb ague by means of ergot.

In chronic diarrhea ergot has also been found a very useful drug. Its special field appears to be the serous or seromucous diarrheas of adults in which nervous conditions are the most important etiological factors. The vasomotor paresis which develops in these cases and permits the free outflow of serum from the dilated blood vessels of the intestinal wall is prevented by the toning up of these blood vessels consequent upon the effect of ergot. In bacterial diarrheas, especially at the beginning, the outflow of serum is of itself a protective effort on nature's part to assist in the throwing off of the offending micro-organisms

and this protective mechanism must not be interfered with. After a time the diarrhea seems to continue as the result of the formation of a bad habit of relaxation on the part of the intestinal vessels and then ergot has a distinct field of usefulness.

It is not unlikely that in the serous conditions incident to other diseases ergot may prove to be a most important agent. Edema of the lungs still continues to be an extremely fatal disease in spite of all therapeutic efforts. Since ergot has proved so beneficial for edema of the brain, its use here would seem to be especially indicated and, as a matter of fact, some cases have been reported in which recovery has taken place in what would otherwise have proved to be fatal pulmonary edema. In dysentery, at times, the outflow of serum from the blood vessels proves a culture medium for the rapid multiplication of the micro-organisms present in the intestine. Under these circumstances the use of ergot would seem to be indicated.

In all these cases the drug should be used up to its full physiological effect. With regard to alcoholism especially subcutaneous injections of half a dram of a fluid extract of ergot containing 12½ per cent. of the drug should be employed. This should be repeated as often as is necessary, or until there is a definite improvement in the patient's condition. As was very well said by several of the participants in the discussion at the New York State Medical Association meeting (see Medical News, October 31, p. 852) to have due success in the use of ergot the ordinary ideas with regard to the dosage of the drug must be revolutionized. To give small amounts is to invite failure, while so far the use of larger doses have produced no serious effects and it would seem that none need be feared. Further investigation of the uses of ergot in these and allied conditions may make the drug one of the most useful in the Pharmacopœia.

DO LIVER AND KIDNEY CELLS REGENERATE?

It is beyond our ability to foretell at what point that branch of surgery will end which depends for its success upon the belief that variously diseased parenchymatous cells will regenerate in the presence of an increased and altered blood supply.

In the last seven years the operation of epiplorrhaphy has been performed several hundred times, due to the stimulus given it by the success in 1895 of Rutherford Morison. Greenough, of Boston, has recently collected particulars of 105 patients with cirrhosis of the liver with ascites due either to alcohol, syphilis or malaria, that had been operated on by the Talma technic. It will be remembered that this is based upon the belief that the ascites is due to mechanical obstruction rather than to an effort on the part of nature to cast off certain poisonous substances from the blood which the damaged liver cells can no longer break down into the elementary excretory products of metabolism.

Of Greenough's 105 patients, 31 died within thirty days of the operation, 29 recovered and lived upward of thirty days without showing any improvement. Forty-four showed some improvement, but in many of these the time elapsed after operation was very short. Sixteen had died at periods ranging from one to twenty-four months after operation and only nine were alive and free from ascites more than two years after the radical treatment had been instituted.

Brewer's statistics, given in his recent textbook, are somewhat more favorable. He records a mortality of 37 per cent. with 20 per cent. of marked improvement and 10 per cent. of cures. In the opinion of this author these results seem to warrant its continued trial inasmuch as the mortality a few months after ascites has developed is about 100 per cent. Those who favor the operation describe the high mortality in part to the belief that ascites may in many cases be looked upon as a sign of approaching death.

Sinclair White, in the *British Medical Journal*. Oct. 10, 1903, says that the testimony of competent observers, who during operation "have been able to satisfy themselves by sight and by touch that well-marked cirrhosis was present in patients who subsequently recovered and remained free from recurrence of the ascites, is not easily set aside."

Talma and Drummond claimed for the operation merely that it would cure or relieve ascites by providing abundant anastomosis between the portal and systemic veins, but there seems to be reason for believing that it may accomplish more than this. As, with the improvement in technic, there is a decrease in mortality and less fear of the operation, it becomes possible for the surgeon to obtain cases before the patient's state is hopeless, there may be possible an actual regeneration of the old or even a creation of new parenchymatous cells. This idea has been exploited in the recently developed operation of decorticating the kidney for chronic nephritis.

While clinicians are striving to determine the validity of the claims in favor of this technic, re-

search students are attacking the problem from the laboratory standpoint. Haven Emerson, in a paper read before the Association of the American Physicians, Washington, 1903, as a result of a series of experiments at the Columbia laboratory, concludes that "in the dog, where the decapsulation is intraperitoneal, we have marked vascular connection with important viscera, not with fatty tissue, and so marked a formation of connecting tissue penetrating the parenchyma from the new capsule as to present the picture of a beginning interstitial nephritis. Where we find vascular connection we see the most serious lesions of the renal parenchyma. Where the real lesions are not found, we see no formation of new blood vessels."

It is unusual to find accurate laboratory and clinical evidence at variance for any length of time, but at the present moment there is a wide diversity between the opinions just quoted and those of Edebohls and his followers, who have been practising decortication very widely. It may be possible that these dissenting views will have a clearer relation to each other if it becomes possible for the subjects of the clinical and laboratory workers to be similar. In the one case the patient was a healthy dog, in the other a diseased human being.

Leaving the ultimate question of cell-regeneration for future decision, and considering only the expediency of what may be termed sanguiducent operations for the relief of symptoms which destroy life, there appears to be ground for the statement that in chosen cases they should be undertaken. As yet they are restricted to the relief of the liver and the kidney. There is before the medical world to-day no question more profoundly important nor fraught with greater possibilities than the determination of the efficacy of a technic which enables one at will to modify and to deflect the circulation of the abdominal viscera.

HOPE IN THE HOME.

The second lecture under the auspices of the Phipps Institute was delivered by Dr. William Osler, in Philadelphia. The subject, "The Home in Its Relation to the Tuberculosis Problem," was as striking in its forceful presentation of the Home Treatment of Disease, as Dr. Trudeau's paper, published six weeks ago, was of his personal experience with Sanitarium treatment.

The historical handling of the treatment of tuberculosis, though presented merely in the form of allusion, is convincing; for Dr. Osler has focussed the individual rays of past experience upon the work of the present decade, even of the present year, and has shown that there is no insurmountable difficulty in carrying into the homes, where 98 per cent. of tuberculous patients must be treated, the educational propaganda that will sooner or later lessen the sources of infection.

The possibilities that he outlines, of efficient Board of Health inspection, of philanthropic scientific house to house instruction, and of home treatment by fresh air and proper food is intensely practical as well as very suggestive. When Dr. Osler sums up other men's experiences he does it with a critical sense born of his own knowledge that enhances the value of his data. And such an article should justly lead many a physician to confidently assume the home treatment of patients who could not go away; and whom they otherwise would give up.

ECHOES AND NEWS.

NEW YORK.

Mosquito Extermination.—On December 16, at 2:30 P.M., in the rooms of the Board of Trade and Transportation (Mail and Express Building, Broadway and Fulton street), will be held the first general convention on the subject of Mosquito Extermination, and all that implies in the way of health, drainage for agriculture and other objects, scenic improvement of foul, wet places, etc., etc. Speakers of national reputation from all sections are on the program and the themes comprise a review of the progress of the movement for extermination from a number of different viewpoints.

Omission in Report of Genito-Urinary Section of Academy.—In our last week's report of this Society we omitted to credit Dr. John Van der Poel as the author of the cases of "Retention of the Urine Due to Foreign Body in Bladder of Uncertain Origin," and of "Extravasation of Urine Due to Phimosis."

State Health Matters.—According to the bulletin of the State Board of Health for October, there were no deaths in three towns in the State during that month. These healthful communities were Malone, with a population of 5,935; Camden, with a population of 3,745; and Westfield, with a population of 2,430. Baldwinsville, with a population of 3,000, and Walton, population 4,869, each reported one death in the month. The total number of deaths in the State for the month was 9,786, or 226 more than the average for the last five years.

Professor Allchin Clinic at Roosevelt Hospital.—Professor Allchin of the Westminster Hospital, London, gave a very interesting talk before the students of the College of Physicians and Surgeons, at the Syms operating theater, Roosevelt Hospital, on Dec. 7. He was introduced by Professor Walter B. James, and devoted a part of the hour to an exhibition and explanation of a case of acute articular rheumatism. He said in part: "There are fewer cases of acute articular rheumatism now than formerly, and the chief symptom, pain, lasts for a much shorter time. This is due largely to the use of salicylates as a specific. The two principal symptoms are pain and

affections of the heart. The former accompanies the disease in children, but is much less severe than in adults, and lasts only a few hours. It is common to see a child suffering severely in the morning, and find that it is able to run about and play in the afternoon. In this class of cases the salicylates seem to be of much less value than in adults. The heart lesions in children are dominant; but loudness of a murmur is not characteristic of the state or severity of the lesions producing it. As complicating factors you may expect, and are very likely to find, chorea, endocarditis, pericarditis, subcutaneous nodules, sore throat, and acute tonsillitis. In the adult the dominant symptom is pain coming on suddenly, and persisting for one or two weeks under treatment. The heart is not seriously involved, and usually escapes if there was no previous disease."

Prof. Allchin spoke very cordially of American physicians and was thankful for the honor bestowed upon him in being allowed to address in a didactic fashion the body of students before him. Professor James announced that Prof. Allchin's System of Medicine will be placed in the medical library of the college as soon as the recommendation is ratified by the Committee on Accessions.

Fee for Deficients' Examinations at College of Physicians and Surgeons.—According to a recently published rule of the Faculty at Columbia all students in the medical department of that university who are found deficient upon examination will be required to pay a fee of $5. This applies especially to conditions attendant upon the regular spring test of each year, and every student who is obliged to come up in September must pay the fee for his particular series, it being understood that no one can advance with his class who carries more than three deficiencies. Failure to pass at the first conditional examination entails a charge of $5 for a second trial in each subject in which the student is still deficient, and he may not advance with his class until such deficiency is made good. It will be interesting to note whether this rather severe provision will increase the college exchequer or elevate the standard of scholarship. If the latter result is brought about there will be no question as the efficacy and wisdom of the plan as above outlined.

Presbyterian Hospital Report.—The annual report of the Presbyterian Hospital has just been issued, and shows that a greater number of medical and surgical cases have been received than ever before in its history. The present accommodations of the hospital are taxed to their utmost, and the demands for care and treatment are yearly increasing. Although the annual deficit continues to be large and this year amounted to $58,504.88, the work of the hospital has not been curtailed, as the managers have had faith that the public will sooner or later appreciate the charitable service rendered, the absolute necessity of it, its importance to the public health, and also the great value of the educational work in the training of physicians and nurses. During the fiscal year ending September 30, 1903, 71,235 days of treatment were given to 3,214 patients in the hospital wards and private rooms, the average being 195 per day, which is as many as the present capacity of the hospital will admit of without unwise overcrowding. The average time spent by each patient in the hospital was twenty-two days. Of these patients 68 per cent. were unable to pay anything and were treated free, 6 per cent. were on endowed beds at the request of those having the right to nominate patients for such beds, and were therefore not charged for treatment, 17 per cent. paid only $1 per day, and the remainder, 9 per cent., were private-room patients and were charged little more than the cost of their care. The average cost to the hospital, including all special nursing furnished, has been for ward patients $2.51 per day. The dispensary has the services of 46 physicians, of whom 23 are on duty each week day from 1:30 to about 5 P.M. Prescriptions given are filled at the pharmacy for the trifling fee of ten cents, regardless of the real cost of the medicine, and without charge if the patient is unable to pay. The same patient may come daily as long as his or her condition needs the attention of the physician. During the past year, 30,092 persons made 81,219 visits, being an average of 269 per day and an average of 3 visits by each person; 82,488 prescriptions and 20,698 surgical dressings were furnished. The average amount paid by patients per visit was 12¼ cents, and the average cost to the hospital per visit, including prescriptions and dressings furnished, was 11¾ cents. During the past year the ambulance responded to 2,844 calls, an average of 8 per day. Of this number 394 patients were treated by the ambulance surgeon, and then taken to their homes or left at place of call, not needing further hospital treatment. The cost of the ambulance department was about $3,946 during the year, and the revenue to the hospital $16. While there are several other hospitals in the vicinity, this is the only one maintaining an ambulance service ready day and night for immediate calls. The pathological department is an important and indispensable factor in the examination of practically every patient admitted to the hospital. More than 18,000 bacteriological, histological, microscopic, and chemical studies and analyses have been made during the year.

Tenement House Commission Report.—Robert W. de Forest, the Tenement House Commissioner of New York City, has transmitted to Mayor Low the first report of New York's new Tenement House Department. In it he says: "On January 1, 1902, a new department of the city government known as the Tenement House Department was created. Since that time all the tenement houses in New York have been examined and their condition ascertained. Tenement conditions in many instances have been found to be so bad as to be indescribable in print; vile privies and privy sinks; foul cellars full of rubbish, in many cases of garbage and decomposing fecal matter; dilapidated and dangerous stairs; plumbing pipes containing large holes emitting sewer gas throughout the houses; rooms so dark that one cannot see the people in them; cellars occupied as sleeping places; dangerous bakeries without proper protection in case of fire; pigs, goats, horses and other animals kept in cellars; dangerous old fire-traps without fire escapes; disease-breeding rags and junk stored in tenement houses; halls kept dark at night, endangering the lives and safety of the occupants; buildings without adequate water supply—the list might be added to almost indefinitely. The cleansing of the Augean stables was a small task compared to the cleansing of New York's 82,000 tenement houses occupied by nearly three millions of people representing every nationality and every degree in the social scale. The task that confronted the Department was not, however, limited to this. Without organization, without employees, with all its problems before it, it was on the very day that it came into existence confronted with an organized and vigorous attack in the legislature upon the fundamental principles of the law for whose enforcement it was created. Without previous records, with almost no information in re-

gard to the condition of the existing tenement houses, it was called upon to carry out an important and far-reaching scheme for their improvement, involving the structural alteration of over 40,000 buildings. In the period under consideration in this report a new branch of the city government has been organized, its machinery created and a force of about 400 employees trained, disciplined and educated; far-reaching and important advances in legislation have been secured as a result of the Department's action, and radical and vicious attempts to break down the tenement laws defeated. Living accommodations for 16,768 families, or 83,840 persons, have been provided in sanitary, comfortable and decent houses, each one of which has been built according to law; notorious evasion of and non-compliance with the laws has given place to their complete, uniform and impartial enforcement; the evil of prostitution has been practically abolished in the tenement houses; 337,246 inspections have been made; 55,055 violations filed; 21,584 repairs made to plumbing; 13,617 water-closets cleaned; 11,611 accumulations of filth removed from cellars and other parts of such buildings; 13,732 ceilings cleaned; 15,364 walls cleaned; 10,060 unsafe wooden floors removed from iron fires-escapes and new iron floors substituted; 1,701 fire escapes erected on buildings that before were without this protection. The registration of 44,500 owners' names has been secured, thus fixing the responsibility for bad conditions in the tenements; contagious disease has been checked and prevented; 32,825 citizens' complaints have been investigated and the conditions complained of remedied; and an important tabulation and presentation of the population in every tenement house block in the Borough of Manhattan has been prepared that will be of incalculable value to the city. The existing tenement houses have been frequently and systematically inspected; foul cellars have had the accumulated filth of years removed; defective and unsanitary plumbing which has apparently existed for long periods has been remedied; houses unfit for human habitation vacated; hundreds of houses have been radically reconstructed and improved; light has been let into dark rooms; vile yard privies and privy sinks have been removed, and the whole sanitary condition of the city raised to a higher standard. The results of this work are clearly reflected in the reduced death-rate, which in 1902 was 18.7 as compared with 20.0 in 1901, and in the first eight months of 1903 has been reduced to 18.0. To those who have borne the burden of the organization of the new department what has been done seems but a beginning—a first step in the endless fight against disease and death." The report is the most comprehensive report on this subject that has ever been made by a city department and will shortly be printed, in two volumes of about 1,000 pages. It will contain many photographs, plans, and other illustrations. One of the leading features of the report is a series of colored maps, showing population, density of population and the nationality and the number of families living in each block throughout the tenement districts of the Borough of Manhattan. The report includes, among other subjects, the following: Houses Unfit for Habitation, Citizens' Complaints, Periodic Inspections, Contagious Disease Inspections, Neglected Houses, Disease Houses, Condemnation of Rear Tenements, Municipal Tenements, Janitors, the Structural Improvement of the Old Houses, Privy Sinks, Dark Rooms, Fire Escapes, Prostitution, The New Law Tenement, Dampproofing, The Enforcement of the Law in New Buildings, Legislation, Opposition to the Department and Law, The Relation of the Department to the Public, The Registration of Owners' Names, Co-operation with Other Departments, Employees, Corruption Checked, Inspector's Equipment, Women Inspectors, Departmental Instructions, Organization of the Department, Plumbing, Cellar Rooms, Bakeries, Rentals and Vacancies.

PHILADELPHIA.

Dr. Van Lennep Honored.—The fiftieth birthday of Dr. W. B. Van Lennep, Professor of Surgery at the Hahnemann Medical College was celebrated December 5 by a banquet tendered him at the Hotel Bellevue by a number of physicians and surgeons of the city. Several toasts were responded to, and Dr. Van Lennep was presented with a silver punch bowl.

New Hospital at Uniontown.—The Uniontown Hospital, erected at a cost of $100,000, was recently opened for the reception of patients, five of whom were received the first day. The hospital, which is one of the best equipped in the State, will accommodate about 100 ward and 14 private patients. The staff includes 15 physicians.

The Typhoid Epidemic at Butler.—The typhoid epidemic at Butler, Pa., is now believed to be practically under control. The new cases are decreasing and the work of caring for the patients has been systematized by Dr. M. S. French, of Philadelphia, who is practically in charge. The twenty-five nurses sent from Philadelphia are looking after the patients in the Hospital of the City of Brotherly Love, which was organized in a vacant hotel. The hospital is in charge of Dr. L. H. McKinnie, lately a resident at Jefferson Hospital. Dr. F. C. Johnson, who was sent by Mayor Weaver to investigate the condition at Butler, has returned to this city and furnished an exhaustive report of the situation. He states that the epidemic was caused by the pollution of the sources of water supply, the serving of the city with unfiltered water thus polluted, and neglect on the part of the citizens, even after being warned to sterilize by cooking all articles of food and to boil all drinking water. The report states that the tragic feature of the epidemic is the fact that it was absolutely preventable and that with plenipotentiary powers in the hands of the Health Bureau it might have been prevented.

Observations on Aneurism and Arteriosclerosis.—The Mütter lecture on Surgical Pathology for 1903 was delivered before the College of Physicians of Philadelphia on December 1 by Dr. C. N. B. Camac, of Cornell University, who spoke on the above subject. Dr. Camac dwelt at some length upon the historical aspect of aneurism and the numerous theories regarding its causation. He then detailed the results of a long series of experiments made with the object of determining the nature of the change in the elastic tissue of the media which is probably the first change in the development of aneurism. He studied arteries from 33 persons, staining them all for the elastica. The arteries included both normal and abnormal conditions. Müller-formol was found to be the best fixing agent, and Weigert's stain gave the most satisfactory results. The elastic fibers in the diseased vessels were found to be straighter than normal in some instances and fewer in number, but they showed no change in histological structure. Dr. Camac next experimented with chemicals to determine if changes could be detected in this manner. Acetic acid and potassium hydrate were used as digestants, but the

latter was found not to be feasible. Acetic acid in from 5- to 15-per-cent. solutions was found to be available, but a long series of tests showed that no histological change could be demonstrated. The change in the elastica preceding aneurism is believed then to be a physical or molecular change. Regarding the relation of general arteriosclerosis to aneurism, Dr. Camac stated that it is not a necessary feature of the latter. Broadly speaking, the presence of arteriosclerosis suggests the probability that aneurism will not occur. Dr. Camac showed many microscopic specimens of the tissues studied. Before the lecture Dr. Camac was entertained at a reception given by Dr. George McClellan.

The Smallpox Situation.—Smallpox continues to increase, more than half of the wards of the city containing one or more cases of the disease. During the week ending December 4 there were reported 99 new cases, an increase of 29 over the preceding week. Since the beginning of the year, 1,579 more cases have appeared than were known during a similar period two years ago. Negroes are the greatest sufferers, as they, more than whites, refuse to be vaccinated. The following instructions to vaccine physicians have been issued by Director Martin: (1) Every vaccination shall be preceded by a preliminary cleansing, accomplished by means of green soap, alcohol and water; (2) the abrasion shall be made by means of a scarifier or lancet, which must be sterilized before and after each vaccination by flaming with alcohol; (3) the abrasion must not cause more than punctiform hemorrhage. When properly performed there should be no blood; (4) virus must be thoroughly incorporated with blade of lancet or with sterile glass rod; (5) when sufficient time cannot be given for arm to dry a piece of clean wax paper should be applied to abrasion and secured by strip of zinc oxide adhesive plaster; (6) all cases of vaccination shall be seen in the second week, and the date of the second visit must be incorporated in the report, together with statement as to whether vaccination was successful or unsuccessful, a failure to make report of the second visit relieving the city from all pecuniary obligation; (7) unsuccessful vaccinations must be repeated.

Obstetrical Society.—At the meeting of the Philadelphia Obstetrical Society, December 3, Dr. William R. Pryor, of the New York Polyclinic Medical School, by invitation addressed the Society on the subject of "Puerperal Sepsis." Following the address Dr. Pryor was entertained at a reception given by the President of the Society, Dr. J. M. Fisher.

CHICAGO.

Appointment of Dr. Biehn.—Dr. Joseph F. Biehn was certified to by the Civil Service Commission as city bacteriologist and superintendent of the milk and food inspection bureau, after passing a competitive examination. He was graduated from the Northwestern University Medical School in 1901, and has been instructor in bacteriology since that time. His salary will be $2,000. His duties as professor of bacteriology at Dearborn Medical College will not interfere with his work in the city laboratory.

Pathologist at Manila.—Dr. Maximilian Herzog, who for more than seven years has been Professor of Pathology and Bacteriology in the Chicago Polyclinic, has been appointed pathologist in the Bureau of Government Laboratories at Manila.

New Hospital.—The Hospital Daughters of St. Joseph are going to start work as soon as plans are made on a four-story fireproof hospital, to be erected on the east side of Harvard avenue, between Sixty-third and Sixty-fourth streets. It will be 180 x 80 feet, pressed brick and stone front, and will contain about 80 rooms, and 5 wards. The cost will be $80,000.

A New Institution.—A new institution will be built soon at North Forty-third avenue and Church street for the St. Joseph's Orphan Asylum. The various buildings will include a three-story fire-proof hospital, 60 x 170 feet in ground dimensions; two-story chapel, 62 x 32 feet, and one-story power and laundry plant, 42 x 40 feet. The total cost is estimated at $80,000.

Bone Changes in the Fetus.—In a paper on this subject, Dr. Frank S. Churchill said there were striking departures from the normal in the appearance and structure of bone, both macroscopically and microscopically. These changes are found widely distributed, but most frequently in the long bones, and especially in the epiphysis. The processes of cartilage production and bone production go on in rachitic bone, but in disturbed relations, cartilage production being excessive and ossification deficient. The result is a bone deficient in lime salts, thickened and flexible, and upon these characteristics depend the deformities seen in rickets. Over-cartilaginous production causes thickness; hence the bosses seen on the skull, the rachitic rosary, the broadening of wrists and ankles. Deficient ossification makes the bone softer, and more easily bent when exposed to the pressure of bodily weight and muscular action; hence the deformities of the spinal column and pelvis, the curvature of forearm, thigh and leg, the greenstick fractures. As the long bones increase in length by ossification at the junction of the epiphysis and diaphysis, shortening of the limbs is also seen, due to a failure of this process, producing a dwarfed effect. On section of a rachitic long bone, the principal change is seen at the ends, where the cartilage layer uniting shaft and epiphysis is seen to be much thickened and broadened, with irregular and ill-defined edges, unlike the narrow, well-defined line of the normal bone. This cartilage area is of a bluish color, is softer than normal, and the calcified spots are irregular and scattered. In the shaft, the outer layers of the bone are thickened and soft; the inner layers more thoroughly ossified, the medullary canal more vascular and resembling granulation tissue. Microscopically, the cartilage cells in the zone of proliferation are found to be piled up on each other, not arranged in regular columns. The line between cartilage and advancing bone is irregular, and not well defined. Eyelets of bone are seen in epiphyseal cartilage, and parts which should be completely ossified are still cartilaginous. There is also a great increase in the number and size of the blood-vessels. In the shaft are seen more or less thickening and increased vascularity of the periosteum. Instead of hard compact bone is seen irregular spongy masses. After a variable length of time, say from three to eighteen months, the active proliferation in the cartilage and periosteum ceases, and is gradually replaced by ossification. Condensation and retraction often occur in the spongy masses of bone, and the ultimate result is sometimes an ivory-like structure harder than normal bone, a condition noticed by surgeons operating upon patients who have suffered from rickets in early life. He described the less frequent changes that are found in the spinal column. He also mentioned the changes which may take place in the pelvic bone. The development of rachitis is preventable except among the extremely poor. Given a normal new-born infant, with a fairly intelligent mother, the physician can correct the first stage of

malnutrition, and by intelligent methods of feeding insure proper growth and development. But he must be keenly watchful for the first disturbance of nutrition, and then take vigorous action along dietary lines.

GENERAL.

Addition to Orange Hospital.—Plans are being considered to make a large and important addition to the Orange Memorial Hospital. The institution has been overcrowded for a long time, and it is planned to erect an extensive addition costing from $60,000 to $75,000. Work will probably be started early in the spring.

Psychopathic Ward in University of Michigan.—The psychopathic ward at the hospitals of the University of Michigan is now nearly ready for occupancy. The State made an appropriation for the cost, but the University added $5,000 from its own funds to fire-proof the upper part of the building. The University authorities felt that they could not be free from blame if any of the peculiar class of patients for which the psychopathic ward is constructed should be injured through lack of the greatest precautions against fire.

Arsenic in Food Ruled Against by London Commission.—The royal commission on arsenical poisoning from food and drink has recommended the prohibition of the sale of beer and other liquid food, or of any liquid entering into the composition of food, which contains one-hundredth of a grain or more of arsenic per gallon, and the prohibition of the sale of solid food containing one-hundredth of a grain per pound. The commissioners find there are serious defects in the present machinery available to safeguard the public.

British Food Statistics.—According to Major P. G. Craigie of the Royal Statistical Society, the annual food imports of Great Britain during the years 1889-91 amounted to $23.20 per head of population. Nearly half of Sir Robert Griffin's estimate of £11 per head as the average outlay for all forms of food and drink of the Briton is spent on imported foods. The use of meat had greatly increased. In the 1857-59 period sea-borne meat amounted to but five pounds per head; now it is over fifty-three pounds. He suggested that possibly this large increase in the use of meat had not been wholly beneficial in its effects on the health and prosperity of the nation.

Medical College Burned.—The medical college building at the University of Vermont was burned to the ground Dec. 2, 1903. The loss of $20,000 is covered by insurance. The building was presented to the university in 1884 by John B. Howard.

Physician's Certificate before Marriage License.—The Iowa Society for Suppression of Disease and Degeneracy has prepared a bill to be introduced in the coming general assembly providing for a physician's certificate of examination before a marriage license can be issued.

Medical Press Exhibit at the St. Louis World's Fair.—It is to be regretted, as a matter of history and of criticism, that no International Exposition has ever had an exhibit of the medical and scientific publications of America, as a collective and comprehensive exhibit. A few scattered displays made by individual publishers, or included in the general newspaper exhibits, were all that served to represent the American Medical Press either at Chicago or at Paris. It is true that at Buffalo a commendable effort was put forth by the department of press and publicity to keep on file the current issues of all American publications. This plan was only partially successful. Mr. Walter Williams, through the Missouri Board of Commissioners, is preparing an exhibit of journalism, but this will embrace only the publications of Missouri. The undersigned has secured adequate space at St. Louis, in the palace of Liberal Arts, with a view to making a display of American Medical publications which shall be commensurate with the importance of this class of work, and earnestly solicits the cooperation of editors and publishers of medical journals. Decisive action must be taken at once. The expense necessary to make this exhibit will be nominal. There is no charge for space, and the writer believes that the department of publicity will assist us in maintaining an up-to-date and comprehensive exhibit, where files of current issues of every medical journal in the land may be found during the progress of the great fair. Full information will be furnished later, and all medical journalists are urged to communicate at once with the undersigned with a view to united action and early endeavor so that additional space may be secured if necessary to accommodate all who desire to join the bureau. Chas. Wood Fassett.

Wheeling Medical Library Association.—The annual meeting of this association was held December 5. The proceedings consisted of reports of the Secretary and Librarian, Dr. W. H. McLain; President's Address, Dr. F. L. Hupp; Symposium Phototherapy. Short papers by Dr. J. S. McClellan, Dr. G. Ackerman, Dr. J. Schwinn. Discussions were opened by Drs. Wingerter and Noome. This is the sixth year of association, with a library which now contains 4,000 books and 25 journals on file.

Obituary.—Dr. R. D. Murray, a yellow fever expert of wide reputation, and dean of the Marine Hospital Service, died in Laredo, Tex., yesterday, from injuries sustained in a runaway accident a week ago. He was a native of Ohio, sixty-four years old, and was a Civil War veteran. For several years he held the chair of instructor of anatomy in a Cleveland medical college. He entered the Marine Hospital Service in 1872, and was in charge at Norfolk, Va.; Mobile, Ala., Philadelphia, New Orleans, and Key West, Fla. The interment will be in Bluffton, Ohio.

Dr. Horace M. Paine, who died last Sunday morning in Atlanta, Ga., was one of the best known homeopathic physicians in New York State. He was born in Paris, Oneida county, on Nov. 19, 1827. He was graduated from the University of the City of New York in 1849. He practised his profession in Clinton and Albany, in the latter city thirty-one years, and relinquished active work in 1895, since which time he had lived in West Newton, Mass., and in Georgia with his sons. He was one of the founders of the Homeopathic Medical Society of the State in 1850 and served it later as secretary and president. He was prominent in the long effort by which his school became legally recognized in New York. For twenty-one years he served as one of the State homeopathic examiners, was one of the first trustees of the Albany Homeopathic Hospital, an incorporator of the Middletown State Hospital and was largely instrumental in securing the legislation establishing the Gowanda State Hospital. He was a member of the American Institute of Homeopathy, the Hahnemann Association, of several similar local societies and an honorary member of many homeopathic societies here and abroad. He leaves a wife, to whom he was wedded fifty-one years ago; three sons, Dr. Howard S. Paine of Glens Falls, Dr. N. Emmons Paine of West Newton, Mass., and Dr. Clarence M. Paine of Atlanta, Ga., and one daughter, Miss Emily F. Paine of New York. Dr. John M. Paine, curator of the Metropolitan Museum of Art, is an only brother.

Dr. William H. Holmes died last Monday night in his home at 48 Hillyer street, Orange, N. J. He was

born in New York sixty-nine years ago. Dr. Holmes had lived in Orange for the past thirty-nine years. He had suffered from heart trouble and Bright's disease for a year and these contributed to cause his death. He served in the navy as an Assistant Surgeon during the Civil War, holding the rank of Lieutenant. He is survived by his wife, who lives in Jersey City.

Dr. Joseph M. Harcourt, who came from Ireland in the early '50s, died last Monday at his home, 110 Decatur street, Brooklyn, in his eightieth year. He was a member of the Kings County Medical Society. He was known as a linguist, a mathematician and writer on professional subjects.

CORRESPONDENCE.

RE "SPECTACULAR PROPHETS."

To the Editor of the MEDICAL NEWS:

DEAR SIR: Referring to the criticisms of your editorial on page 945, issue of November 14, 1903, there is one slight error, into which you have fallen, and which may be well to correct. Writing concerning another matter the editor of the *Boston Medical and Surgical Journal*, in a letter dated December 5, 1903, says, as regards the article on Francis Parkman, so courteously criticized by you:

"We are not in the least ashamed of having published it, and we can assure you that we have not been placed in a box thereby. On the contrary, we have no regrets whatever in having published it. As for the reproduction of the Parkman article in book form, we shall be very glad to have it appear as having been originally published in this journal."

The kindness and urbanity illustrated in your editorial toward me, I do not doubt, will move you to make amends to the editor of the *Boston Medical and Surgical Journal*. Toward brother editors one owes an especial consideration. Sincerely yours,

Philadelphia, Dec. 7, 1903. GEORGE M. GOULD.

SPECIAL ARTICLE.

BYWAYS OF MEDICAL LITERATURE.—XVIII.

STUDIES IN HUMAN NATURE.

PROFESSOR ELIE METCHNIKOFF, the distinguished Professor at the Pasteur Institute, who is probably one of the best known and certainly one of the best liked of living medicine men, has recently issued a book with this title "Studies in Human Nature" or an essay in optimistic philosophy. The original, of course, is in French, and while Professor Metchnikoff is a Russian, his French is idiomatically simple enough for any one who has a reading knowledge of the language. He dedicates the book to his wife and in closing the preface thanks especially his friend, Dr. Roux (who is, of course, the distinguished co-inventor with Behring of diphtheria serum), for having rendered his French more French. It is rather interesting to find the great pathologist, whose theory of phagocytosis has attracted more attention and been the source of more interest to scientists generally than perhaps any other medical theory invented in recent times, discussing what he calls the disharmonies of human nature and the possibility that there may be of making the disharmony concordant by a process of selective development especially under the influence and direction of men of science.

The third chapter of Dr. Metchnikoff's book contains a discussion of the possible Simian origin of man. Professor Metchnikoff does not seem to consider that this is as distant a possibility as many other biologists of the present time. He finds in the close relationship of the dentition of man and the apes and of the organization of their extremities and brain so many arguments for a relationship of descent. The resemblance between the vermiform appendix of man and of the anthropoid apes has for him much more than the force of merely a chance resemblance or an incidental analogy. The similarity between the placenta of the ape family and that of man and between the fetal development of man and of the anthropomorphic apes is for him an index of community of origin that is probably not very distant. His crowning argument, however, is the blood relationship between man and the apes, as that can be demonstrated by the fact that the serums from these two creatures have similarities as regards their hemolytic and precipitating powers which do not exist for animals farther apart from one another in the scale of life. This argument, of course, has only recently been exploited and so comes with apparently more force since the limits of its possible application are not as yet definitely decided.

Metchnikoff seems to be quite sure that a transmutation of species is quite possible and that this alteration need by no means necessarily involve a very long period of time or a very definite succession of minor modifications leading up to the complete differentiation of species. He cites the case of the famous lightning calculator, Jacques Inaudi, who demonstrates his skill in museums, etc., and who will be as familiar to most American medical men as he is to the French profession, since he has been on exhibition in this country, at least once, if not oftener. For Metchnikoff this case seems to show the possibility of the abrupt development of characteristics hitherto inexistent in the human species and that may possibly be transmitted and thus become the source of specific or even generic differences. The crux of the matter, unfortunately, is that usually these special peculiarities that make their appearance so unexpectedly in one generation are seldom transmitted to the next. While the Bach family has given birth in some two hundred years, it is said, to over forty distinguished musicians, it must not be forgotten that this is the only example of successive generations of a musical family on record, though there have been many other distinguished musicians besides the Bachs, and many musicians have had children besides the old baker, Vert Bach, who was responsible for the beginning of the musical proclivities of the Bachs.

Professor Metchnikoff finds not a few of the disharmonies of human nature in the organization and the exercise of the functions of the apparatus of reproduction. As a matter of fact he seems to consider that many of the drawbacks of present human life have their root in the disharmonies involved in exercises of the reproductive function. He has a very curious consideration of a practical character in this chapter that may be of interest to general practitioners. He suggests that in some cases of anemia doubtless the source or the toxic material which causes the destruction of red blood cells and consequently gives rise to chronic chlorosis, is due to a collection of microbes that find abundant nourishment in menstrual blood confined not behind an absolutely closed, but a very minutely patulous hymen. In these cases marriage and the rupture of the hymen with consequent free drainage of the vagina no longer furnishes this nidus for the growth of microorganisms and consequently there is the improvement of health not infrequently noticed in anemic young women after matrimony.

Metchnikoff's most interesting chapters from the social standpoint, however, are those in which he discusses the possibility of lessening the evils which result from the disharmony of human nature. The third part of

the book consists of the discussion of what science can accomplish for this purpose. Metchnikoff seems to be confident that an abiding faith in science will surely lead to great amelioration of the evils of existing conditions.

A rather interesting reflection at the present season of the year, when politics are so much on the tapis is found in the following paragraph: "In politics," Metchnikoff says, "the actual conditions correspond very closely to those of medicine in former times. Every individual of the male sex who has reached his majority is considered by the very fact to be sufficiently prepared for the exercise of all political functions, even the most difficult to be a rational voter, a sensible juror and the like. The only excuse for this state of affairs is the present infantile condition of social science. When sociology has become more advanced, the specialization comparable to that which has taken place in medicine will occur. It is only after this has happened that persons of years and discretion who shall have acquired extensive experience and be in the full maturity of their faculties, because of the integrity of their physiological condition will be able to render the greatest possible services to the society of the future. In this progress toward the true end of existence they will lose much of their liberty, but will gain in revenge a large amount of solidarity."

THE CONQUEST OF FIVE GREAT ILLS.

In *McClure's Magazine* for September, Mr. Cleveland Moffatt has an article on The Conquest of Five Great Ills, or The Great Work of the Pasteur Institutes throughout the world. The five ills that have been conquered are hydrophobia, diphtheria, lockjaw, bubonic plague and serpent venom. The demand of the popular magazines for articles of this kind, shows how deeply the public is interested in such advances in medicine. It would seem, however, that the articles with regard to them should come from medical men and not from regular literary contributors who may know how to write well enough, but who are sure to modify the facts of the case so as to make a better story.

This is what Mr. Moffatt has to say with regard to lockjaw: "As to lockjaw, the Pasteur Laboratory sends a steady supply of antitoxin serum that will prevent the outbreak of this disease, very much as hydrophobia inoculations prevent hydrophobia. In both cases it is true, the treatment is only preventive, not curative. But this is usually sufficient, since the danger is plainly indicated in advance. If by some sad oversight, hydrophobia does break out, it always kills just as it always has killed. But with lockjaw there is still a chance of saving life, even after an outbreak, by inoculating lockjaw antitoxin directly into the brain. The record of recovery is forty per cent."

We have just gone through our annual epidemic of tetanus in this country, and we are trying to impress people generally with the hopelessness of disease. There are certain milder cases of lockjaw or tetanus that run a chronic, or, at least, slow course, from the beginning and that are always hopeful, usually recovering without difficulty under any treatment. Certainly the physicians of this country are not ready to believe that forty per cent. of acute tetanus cases can be cured, even by intracranial injections of lockjaw serum. Our experience in this country with injections beneath the dura, has not veen very favorable and in Europe the practice has had a distinct setback since the first favorable reports were made. It is better that the public should have the truth in this matter, rather than have false hopes raised, that can not be fulfilled in practice. The difficulty lies in making clear to a non-medical writer the limitations of a method of treatment and the fact that very often when it is of most interest to medical men it is as yet only on trial.

A SOCIAL DISEASE.

A blind beggar was arrested not long ago in this city, and when taken before the magistrate on the charge of vagrancy and violating the city ordinance which forbids soliciting alms on the public streets, confessed that he did not have to beg for his support, as he was comfortably provided for, but that having nothing else to do he did it for pastime. He explained: "I only do it for pleasure. I can't see like other people and I would go mad if I sat in the house all the time. I do it to have something to keep me outdoors. I don't have to do it, as my brothers will take care of me, if I ask them to do so." This may seem a curious and paradoxical means of recreation to most people, yet there are many will sympathize with the blind beggar in his craving for something to do that would keep him outdoors. Some one said not long ago that the only justification for a housedog in cities is that it may serve the very beneficent purpose of tempting some elderly lady to take much more outdoor exercise than would otherwise be the case for the sake of a pet dog, who needs the air and the exercise so badly.

The New York *Times*, commenting on the incident of the blind beggar, says: "This blind man is a type of a very large class of persons not all mendicants by any means, but all incapable of other pleasure in life than that which comes from the close and often degrading pursuit of a painful occupation, after the necessity for concentrated toil has passed. There are in New York City some thousands of very wealthy men, who follow business for the same reason that the blind mendicant followed begging. They cannot read or think, or take pleasure in any form of intellectual recreation like other people, and if compelled to sit idle all day, would be at least profoundly unhappy. They perhaps have not the quality of brain to go mad in a conventional sense, or it may be they are already insane on the subject of acquisition and are incapable of any form of pleasure than that which is profitable in money returns. However, this may be, the case of many a merchant and financier is very closely parallel to that of the blind beggar, who could not be content, except when begging."

Such men are often the despair of their physicians, who realize the necessity for some change of occupation, and yet find it practically impossible to convince their patients of the advisability of taking the needed vacation. Usually the pretense is the necessity for their presence in order to secure the smooth-running of their multitudinous business affairs. The real reason is that the habit of a lifetime, the making of money, has become a fixed idea, a pathological entity of itself absolutely controlling mental processes. It is the new disease. The desire for the accumulation of money for which the subject has no real need and which he seeks for no good reason. We have thought that perhaps the presentation of the beggar's case and of the sensible discussion of it, from the standpoint of what is pathological in it, might be of service to the practitioner in some of these difficult cases. Anyhow the case deserves a place in memory. The *Times* very appropriately adds that "the individuals afflicted with this new social disease are commonly the objects of misplaced sympathy. No doubt in their way," the editor concludes, "they are as happy as other people."

PHYSICIANS AND LITERATURE.

The distinguished literary member of the English medical profession who was honored by being raised to knighthood on the occasion of the coronation, Sir Arthur Conan Doyle, is announced as preparing new triumphs for himself by pursuing once more the adventures of

Sherlock Holmes. Novel readers generally consider that Dr. Doyle had effectually disposed of Sherlock Holmes by having him go over a precipice in the Alps. Fiction is stranger than truth in this case, however, and the physician-novelist is able to accomplish the impossible and bring his hero to life once more. This is one of the advantages of romance over life. So many disadvantages in fiction have been pointed out of late years, especially for instance, the fact that the deaths exceed the births so much in novels that it is only a question of a comparatively brief time, until the stock of available heroes and heroines for romance will die out that it is a pleasure to find romance has some great compensations in its favor.

Dr. Doyle is announced as interested in another phase of reproduction besides his literary work. He has bought all the patent rights on a process for reproducing marble busts by a method resembling the pantograph as applied to the enlargement of pictures. It would seem as though subsidiary occupations were to prove more lucrative than the mere practice of medicine. One is forcibly reminded of Dr. Oliver Wendell Holmes' expression with regard to literary men in which he so charmingly improved upon Samuel Taylor Coleridge. Coleridge had said "A literary man should have some other occupation," to which Oliver Wendell Holmes added "and, as far as possible, he should confine himself to the other occupation." As is well known, Dr. Holmes did not follow his own rule very faithfully. If we are to judge from recent successful invasions of the literary field by physicians, of which there are now many notable examples, the form of the expression will, for twentieth century use, have to be modified into something like the following: "All physicians should try their hands and make use of their medical experience in adding to the world's literature. If it pays, they should, as far as possible, confine themselves to the new occupation, since it brings not only money, but glory." If the new maxim will only help to deplete somewhat the overcrowded ranks of the profession we wish it all possible mandatory influence.

HOW MUCH TO EAT.

J. M. Barrie, who seems to be able to do anything, has just produced in London a successful comedy, of which the hero is the stomach. Probably no other dramatist alive could handle such a topic, full as it is of widespread human interest. The American world especially now reeks with dyspepsia cures: No breakfast, no lunch; meat diet, vegetable diet; few meals, many meals; regularity, variety; small quantities and large. A man may cut his allowance down to steak and toast, and still have indigestion. He may feed on lobster salads and ale at midnight and prosper grossly. A German alderman advised us, many years ago, to cure all interior problems by two matutinal mugs of beer. We were turning over the *Autocrat* a day or two ago, brooding upon how human standards change. The poem therein called "Contentment" has for its comic idea luxurious wishes masquerading as simplicity. "A ruby, and a pearl, or so, will do for me; I laugh at show." How is dinner treated on this principle? By assuming that *three* courses are extravagant. "Plain food is quite enough for me: Three courses are as good as ten.' That, in 1857, was as if to-day we should say "Ten courses are as good as twenty." The allegation that "man wants but little here below" has to be interpreted in the light of change. It may at least be assumed that, whatever he gets, it is less than he wants. As Holmes puts it, "I only ask that Fortune send a *little* more than I can spend," which is a large order for Fortune. Luxury, now so dominant with us, has, among its other consequences, led to gross overfeeding, in the attempt to get amusement out of meals, but just how much and what to eat, in individual cases, remains one of the questions which often baffle the most successful doctors. —*Collier's Weekly.*

SOCIETY PROCEEDINGS.

THE NEW YORK ACADEMY OF MEDICINE.

Section on Ophthalmology.

Stated Meeting, held Thursday, November 5, 1903.

The President, Andrew H. Smith, M.D., in the Chair.

Lesions of the Eye, which Occur in the Course of Diseases of the Heart, the Blood-Vessels and the Kidneys.—This was the paper of the evening and was read by Dr. Charles Stedman Bull, who said that the intra-ocular circulation furnishes a visible picture of the condition of the general circulation and is thus of great diagnostic value in diseases affecting the circulation. In anemia for instance, the papilla is apt to be much paler in color than normal, and if during the ophthalmoscopic examination even gentle pressure is made upon the globe, the veins and arteries are emptied. Spontaneous hemorrhage from the intra-ocular vessels is prone to take place under these circumstances, while on the other hand retinal hemorrhages from high tension of the arterial circulation occur quite often and are followed by the appearance of white patches showing traces of the degenerative process by which the effused blood has been reabsorbed.

Central Scotomata.—Large blind areas occurring in the center of the field of vision are usually a sign of the rupture of the arteria centralis retinæ. Such a rupture of this artery may, however, occur within the nerve sheath a considerable distance back of the eye, without producing any visible change within the eye. In these cases the central scotomata are at first hard to explain. When aortic insufficiency exists there is a pulsation of the retinal arteries easily noticeable with the ophthalmoscope and an alternate flushing and paling of the disc may be readily noted in advanced cases. This corresponds with the capillary pulsation which is noticed in other parts of the body, but which occurs on the eye ground before it is visible elsewhere, and thus becomes a valuable early diagnostic sign of the insufficiency of the aortic valve. With stenosis of the aortic valve such a pulsation is absent, so that this may constitute a differential diagnostic sign between the conditions.

Venous Congestion.—In many forms of heart disease a general venous congestion occurs, and this is visible also in the dilated and tortuous veins of the retina. Such general venous congestion may occur particularly in mitral heart disease and may in advanced cases cause a pulsation of the retinal vessels. Changes may be noted, however, in the conformation and function of the retinal vessels when there is no patent heart disease or true disease of arteries, though in these cases there will usually be found some latent disease of the heart or kidneys. Endocarditis in its various forms may produce symptoms on the eye-ground which usually are in the form of emboli with subsequent thrombosis. In rheumatic endocarditis it happens not infrequently that emboli find their way into the retinal vessels, causing temporary blindness over some portion of the field of vision. This form of endocarditis is benignant in its effects, and usually recovery is quite complete. Malignant endocarditis, however, as might be expected from the fact that it is a septic condition gives rise to emboli which set up septic processes and produce serious consequences. An embolus of the central artery of the

retina is always a serious condition, since this is a terminal artery, and the collateral circulation does not make up for the hindrance to the blood-current. This may in certain cases be the first sign of endocarditis. The patient usually becomes totally blind in the eye, and if the circulation is interrupted for any length of time, the retina takes on a grayish color, and as the result of nerve degeneration, the blindness becomes permanent. If only a branch of the central artery is affected the opacity is limited, but the blindness may be permanent over this area. If severe cases of arterial degeneration, miliary aneurisms may be noticed on the eye-ground and are of pathognomonic significance. These occur, as a rule, only in people beyond middle life in whom there are advanced arteriosclerotic conditions. In old patients, however, they are a warning of the possibility of the rupture of an artery in the brain, and patients with such signs should be told of the danger they are in from apoplexy. Sometimes when retinal degeneration is visible in the eye-ground the carotid arteries are so thickened as to be quite palpably degenerate. The underlying pathological condition in these cases is usually syphilis. When nervous lesions exist causing deviation of the eyes, the direction of the deviation may be pathognomonic of the position of the lesion. If the deviation of the eyes is toward the affected side the lesion is in the pons. If the deviation is away from the affected side, the lesion is above the pons. With regard to thrombosis of the venous sinuses, the symptoms in the neighborhood of the eye may be of more diagnostic significance than other physical signs. Usually there is paralysis of the oculomotor nerve with consequent inability to move the eye. If the conjunctiva and soft tissues in the neighborhood of the eye are affected by edema, then the lesion within the skull is not far behind the eye itself. This usually indicates the thrombosis of the lateral sinus.

Albuminuric Retinitis.—In acute nephritis very often the first sign of the occurrence of infection of the kidneys is the presence of edema of the eyelids. In severe cases this may even lead to chemosis, that is, edema of the ocular conjunctiva. Affections of the iris often occur in kidney trouble. Changes in the choroid are also noticed, commonly, however, in conjunction with arteriosclerosis accompanying the kidney trouble. The ocular muscles are said not to be affected in pure kidney disease. When such symptoms occur, there are usually hemorrhages into the nerve roots or the nuclei from which spring the nerves that supply the various muscles.

Prognosis.—When nephritis gives symptoms in the eye, especially when chronic nephritis causes retinal degenerations, the prognosis is always bad, but ameliorations of the condition are not infrequent. It is sometimes asserted that death will take place usually within two years after patches of retinitis albuminuria are discovered. This is not an absolute rule, however, and refers rather to dispensary and hospital cases who are very seldom in a position to take that care of themselves necessary in order to prevent progress of the ravages of nephritis. When the lesions are very marked, death will usually take place within a year. In 62 per cent. of Dr. Bull's cases, the fatal termination came within six months. Seventy-five per cent. were dead at the end of the year. All of the patients that could be traced were dead at the end of two years. Other observers say that about six per cent. will be alive at the end of two years. The importance of this condition is readily understood then, and the characteristic appearances should be familiar to every one. Usually there are yellow, stellate patches around the nerve ending. These are frequent near the macula lutea, and especially between that spot and the disc. Edema of the retina sometimes occurs, leading to folds in this structure and consequent detachment with loss of vision. The primary change, however, is in the blood-vessels, and all other changes are secondary. As the retinal vessels are terminal arteries, the collateral circulation does not compensate for their deficiencies, hence the outspoken character of the lesions. Retinitis albuminuria is usually bilateral, but this does not necessarily mean that it must occur simultaneously, nor that both retinæ shall be affected to the same degree. The very curious fact is that vision is not affected always to the extent that might be expected from the ophthalmoscopic picture. At times, very few lesions can be seen, yet there is great disturbance of vision.

Retinitis and Pregnancy.—If albuminuric retinitis occurs during the early stages of pregnancy, labor should be induced. Where there is a distinct amount of albumin in the urine, and the characteristic signs on the retina, it is worse than useless to wait, for abortion will probably take place anyhow, but at a time when neither mother nor child can be saved. If there are changes on the retina in the latter part of pregnancy, then this rule does not hold. For instance, during the last month of pregnancy, there should be no question of the production of premature labor. If the retinal symptoms develop before six months, however, the safest course is to have labor induced. This depends, in Dr. Bull's experience, somewhat on the condition of the arteries. If the arteries are in good condition the albuminuric retinitis of pregnancy is not dangerous. If the arteries in the eye-ground, however, look like white cords and the capillaries are blocked, then the nerve and its distribution throughout the retina will surely atrophy, if the kidney insufficiency is not relieved by removal of the fetus.

Uremia.—The condition of the eye is extremely important in chronic interstitial nephritis, because the arterial condition can be so well recognized here. When there are severe lesions on the eye-ground, especially if there are exacerbations of the ocular condition, they must be accepted as a warning of the danger of the development of uremic intoxication. The onset of uremic coma may thus be anticipated and measures taken to prevent it, or its occurrence put off, to see that the patient is put in proper condition for its treatment, so that relief may be afforded without delay.

Dr. F. P. Kinnicutt, in opening the discussion on Dr. Bull's paper, said that the occurrence of edema and of other constitutional symptoms during kidney disease, are often attributed to toxemia consequent upon kidney insufficiency, but there is some difference of opinion in the matter. The main question is whether the retention in the blood of excrementitious products brings about the toxemic condition, or whether, as a consequence of the retention of such products, an abnormal metabolism was set up, which of itself produced toxic substances.

There is in the system under conditions of kidney insufficiency an accumulation of urea and creatinin and other such products, that are not simply the result of retention, but must be due to increased production. Such toxemias may produce amaurosis. This occurs typically during severe acute scarlatinal nephritis. At times, when there is rapid diminution of the amount of urine passed. In these cases the point of selection of the action of the toxins on the nervous system is the visual tract. Rapid recovery is the rule, but the subsequent history of such cases, has not been followed in a sufficient number of patients to enable authorities to judge as to whether there may not be a deteriorating influence on vision afterward. The neuroretinitis of chronic interstitial nephritis is an index of an advanced condition of kidney degeneration and usually means a fatal issue within two years. The kidney trouble may

date back over many years, but once it begins to affect the retina the end is not far off, as a rule. There are exceptions, however, which indicate that more careful study will have to be given to this question before absolute prognosis can be formulated. Dr. Kinnicutt cited some illustrative cases in which, notwithstanding the appearance of neuroretinitis, patients subsequently recovered their vision and remained for many years without any further symptoms.

Illustrative Cases.—One patient, at the age of forty-eight years, noticed that his vision was much dimmer than it had been. What first called his attention to this fact was his inability to see well enough to mend a bicycle tire. He was heating a wire for this purpose, but when the wire became hot, the dimness of vision incident to watching the flame lasted so long that before he could use it for the purpose intended, the wire became cold. Observation with regard to his vision showed that in the right eye lights were seen edged with red, and there was a spot in his vision. Albumin was discovered in his urine, and the case looked very serious. He recovered much of his vision, however, as a consequence of careful treatment, and has had no further disturbance of vision and no deterioration of his general health now for about eight years.

Rapidly Fatal Cases.—On the other hand, Dr. Kinnicutt's experience has shown him that the occurrence of albuminuric retinitis may be followed by a fatal termination in a comparatively short time. In a recent case, the first symptoms of kidney trouble were digestive disturbances followed by paroxysmal dyspnea less than six months ago. Bilateral neuroretinitis developed in the course of the affection. In less than six weeks after the first symptom the patient died. It must not be forgotten that diabetes may also cause retinal lesions, and that a complication of diabetes and nephritis is not unusual, especially toward the end of diabetes. In a recent case under Dr. Kinnicutt's care, the patient's mother had died of diabetes, but notwithstanding the presence of a carbuncle some five years ago there was no suspicion of any glycosuria in her case, until eye symptoms developed.

Pathology of Albuminuric Retinitis.—Dr. Ward A. Holden said that the course of pathological lesions in the eye are not always easy to trace, but that albuminuric retinitis seems to begin with diffuse edema of the retina and the optic nerve. This leads to disturbance of the blood-vessels, and before long hemorrhages develop. During the course of the degeneration of the hemorrhagic patches white spots develop. When hemorrhages occur near the macula lutea they are small in size, and are more frequent producing the speckled appearance familiar in so-called albuminuric retinitis. It may be said at once that there is no true neuritis and no actual retinitis present. The edema that occurs first is due to serous exudation from the blood-vessels, and this follows the course of the nerve fibers. The hemorrhages that follow are not due to rupture of the arteries, but to diapedesis, because of the outwandering red blood-corpuscles through the diseased vessel walls. The white patches that develop subsequently are due to fatty degeneration of these red blood-corpuscles. Capillary hemorrhages occur from the deep retinal capillaries which have a tendency to converge toward the macula lutea, hence the characteristic picture presented in these cases.

Venous not Arterial Hemorrhage.—Dr. E. Gruening said that notwithstanding all the investigation made into diseases of the eye, we, as yet, have comparatively little definite information with regard to many of the affections whose symptoms appear upon the eye-ground. Dr. Gruening has never seen arterial hemorrhage in the eye, unless the arteries were very much diseased. Hypertrophy of the heart alone is never sufficient to cause rupture of the arteries. Venous stasis within the eye is rather easy to recognize with the ophthalmoscope and much can be done to correct it by modification of intra-ocular tension by means of properly directed massage.

The Eye in Apoplexy.—Dr. John Winters Brannan said that the eye symptoms of apoplectic conditions are anomalous and often fail to be of diagnostic significance. This is illustrated very well by two recent cases that have been under his care. In the first, a married woman of some forty years of age, who had borne seven healthy children but had no serious illness, was found to be suffering with some very slow-running diffuse nephritis. Casts and albumin were present, though there was no enlargement of the heart. She became unconscious in her bathroom one day, and evidently suffered from a slight apoplectic seizure, for after her unconsciousness passed off, hemiplegia of the left side remained. She recovered completely from this. Notwithstanding the presence of albumin and casts, there were no eye symptoms at any time. In a second case, a woman, also of some forty years of age, suffered from an apoplectic stroke which affected the right side of the body with the left side of the face and a loss of vision on the left side. The eye muscles on this side were also affected. While she recovered from the hemiplegia of the body and regained control over her facial muscles, the palsy of her eye muscles continued. The presence of albumin and casts in these cases must not always be taken as indicating that a nephritis is at work. Nearly always after apoplexy, casts and albumin are found in the urine, but they pass away after a few days and it would seem that their presence was due to the shock rather than to any actual kidney lesion present before the apoplectic stroke.

Difficulties of Diagnosis.—Dr. T. R. Cooley said that while there is a voluminous literature with regard to intra-ocular disease and especially with regard to the change produced in the eye as a consequence of affections of the arteries, the heart and the kidneys, there has been very little real advance, and science is almost tediously slow in its progress. With regard to so-called diffuse senile changes which occur in the retinal vessels, Dr. Cooley has always found it extremely difficult to differentiate them with assurance from changes due to syphilis. Even in old persons it is important to make inquiries with regard to a possible syphilitic history. If they are syphilitic much can be done to relieve them by mixed treatment. In a recent case under Dr. Cooley's care, the age of the patient, over sixty-five years, seemed to render it unnecessary to inquire with regard to syphilitic history. Yet the condition observed on the retinal arteries proved eventually to be due to syphilis. It is curious to realize that there may be large amounts of albumin and casts in the urine without any albuminuric retinitis. On the other hand, occasionally small petechial hemorrhages occur in the eye, which seem to indicate the presence of Bright's disease, yet no albumin can be found. In some of these cases Dr. Cooley has seen Bright's disease develop later. The appearances in the retina then must always be considered suspicious, even though no albuminuria can be demonstrated. With regard to the albuminuric retinitis of pregnancy, it is important not to give a bad prognosis until the case has run its course. Dr. Cooley has seen a retinitis of pregnancy with detachment of both retinæ, followed by reattachment and excellent vision after the induction of premature labor.

Ocular Emboli.—Dr. Knapp said that Professor Billroth, of Vienna, was the first to suggest, in one of his lessons in pathology, that the occurrence of embolism and the consequences of the lesion might be studied in the only set of visible arteries, namely those in the eye.

Within three days after he made this suggestive remark, a case of embolus of retinal vessels was studied and described in one of the clinics of Vienna. This is of itself the best proof that the condition of the vessels of the eye may well be taken as an index of the vascular system throughout the body.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, held Thursday, December 3, 1903.

The President, Andrew H. Smith, M.D., in the Chair.

The Problem of Keeping New York City's Streets Clean.—This was the title of the paper of the evening, by Dr. John H. Woodbury, Commissioner of Street Cleaning of New York City.

Former Conditions.—Dr. Woodbury gave a series of stereopticon pictures in which he showed the condition of New York streets when he took charge of them two years ago. Hester Street, at that time was a crowded thoroughfare constantly filled with a compact mass of people, crowded around the push carts, so that it was impossible to properly clean it. Rivington Street was the same way. Along the curbs of both these streets there were open market carts, adding further by their refuse to the difficulty of cleaning the streets and keeping them clean. Dr. Woodbury dwelt on the fact that streets were the public highways and that the abuse which allowed push-carts in large numbers on them was an unwarranted diversion from the true purpose of maintaining a thoroughfare.

Establishment of Fish Market.—On Rivington Street especially, the nuisance of the push carts became greatest, because here all the fish food was sold for the neighboring streets of the crowded lower east side. Fish in all stages of decay were offered for sale in the midst of a dusty, dirty thoroughfare, and the waste material from the sales inevitably found its way to the street to add further to the noisomeness of the conditions. In order to do away with this nuisance and make the maintenance of clean streets in this neighborhood possible Dr. Woodbury established Rivington Street Fish Market beneath one of the arcades of the new Williamsburg Bridge. At first it was impossible to make the foreign-born peddlers understand that this new market was intended for their use without any payment. After a few of them had experienced what was the real purpose of the change the others flocked in, and now it is not so difficult to keep the streets clean and clear in the neighborhood. Dr. Woodbury insists that other such improvements must be made in other parts of the city, and that markets for other food materials must also be established. Many food materials have been sold from these push carts on the open streets and the number of germs present in the air in these crowded thoroughfares makes this eminently undesirable. Bread, cakes, biscuits and candies are exposed, and various forms of delicatessen. The children are likely to suffer most from such street-exposed food, as they are least resistive to bacterial invasion, and are less likely to be squeamish about what they eat. Thus the matter of street cleaning becomes very important in the summer time for the maintenance of the public health. It must not be forgotten that a city's health is the function of its most unhealthy portions, and that the slums of the lower East Side may easily prove a source of infection even for upper Fifth avenue.

Street Cleaning Methods.—The Commisioner of Street Cleaning must maintain the cleanliness of 1,076 miles of streets. In the more crowded portions of the Borough of Manhattan, particularly, many of these streets must be cleaned twice a day. Wherever the old block pavement remains the only possible way of securing cleanliness is by the man with the broom, the shovel and the bag. In very crowded streets the same thing is true. It is impossible to send a street-cleaning machine through Fifth avenue in the busier portions of the day. The employment of so many men requires organization and esprit de corps. The men employed must be treated as if part of a military company and discipline maintained by military methods. So much was acomplished in establishing this system by Col. Waring, however, that now it is not difficult for his successors, if they have the good will, to maintain it. It is important that asphalted streets should be thoroughly cleaned, in blustrous weather particularly, as the dust from them is likely to be even more noticeable than from rougher paved streets. The dust represents to the medical men a collection of many kinds of germs. For cleaning asphalt, when the temperature is above 50°, the only thing that is effective is a stream of water delivered at high pressure over the surface of the pavement. For this purpose street-cleaning apparatus in which water can be kept at a pressure were invented by the French, and are now in use in this city. Several of them were exhibited in pictures that delivered a stream of water under 20 atmospheres of pressure. This forces the water toward the gutter line and thoroughly cleans the street. Water wagons are also employed in front of the tank of which there is a gas engine, by which a pressure of 100 atmospheres can be secured in the water tank. This cleans asphalt very effectually. So far a lack of sufficient appropriation for the purpose has made it impossible to secure more than a few of these.

The Ash-cart Nuisance.—Up to the present time the loading of ash-carts and the carting of ashes along the streets in the open carts has been one of the great city nuisances. Clouds of fine dust were blown about to settle on everything, to be raised again by the wind and be a continuous bother and irritant for respiratory passages. On a March day a goodly proportion of the ashes seemed to get back into the air. The attempt to abate the nuisance by means of a cloth cover proved a failure. For a time then a wooden cover was employed, beneath which the dumping of the ashes could be secured. As a result of various trials and experiments Dr. Woodbury has finally adopted a large steel wagon completely covered, and with a roll-top desk opening. This not only abates the nuisance of dust, but gets rid of the unsightliness of the old vehicle.

Disposal of Garbage.—Under the old system of carrying the garbage out to sea in dumps and scows there were many serious objections. Much of the material was carried back into the next tide to decorate the bathing beaches in the neighborhood of the city, and be not only a nuisance, but a source of danger to health. The floating material from these scows made the waters near New York unsightly, and the solid material in the opinion of experts was sure eventually to create a bar just at the entrance to the harbor. Under the system introduced by Dr. Woodbury these objections are all done away with. All the garbage material contained in the ashes is taken out and the ashes are used for filling in near Riker's Island. Already a large amount of new ground has thus been made which will eventually be very valuable. In the meantime the dumping scows, especially those of the Delehanty pattern, are held in reserve for emergencies in case the present system should prove insufficient for some special reason, as for instance if a fire or some other serious unforeseen accident should cripple the department's resources.

Classifications of City Waste.—There are three classes of city waste that must be disposed of, each of which requires some different treatment. These are

garbage, rubbish and ashes. By garbage is meant the kitchen waste of houses and hotels, commonly called swill. By rubbish is meant all the household material that, being no longer of use, is left to the street-cleaning department to dispose of. This includes beds, bedding, old furniture, old trunks, boxes and receptacles of various kinds, of different degrees of uncleanliness, and all the broken material of the household. Under ashes is included of course a certain amount of broken material, tin cans and other articles that do get inevitably into the ash pans.

Garbage Disposal.—All the swill material is now taken to Barren Island. This is all organic and extremely offensive material. Here, by means of a reduction process, the watery material and gases are taken out of it, and a compressed, inodorous residue obtained after the digestion of all the organic material. In order to prevent the nuisance, formerly so marked, all ill-smelling smoke from the Barren Island plant and the gas from the digesters are thoroughly washed before being allowed to escape into the air. This unfortunately leads to the loss of an immense amount of valuable ammonia. The sweepings of streets and other organic material constitute the best of manure and is now sold in quantities to many parts of the country. This forms a constant source of revenue.

Rubbish.—This material often contains articles that may still prove useful and always has in it an immense amount of valuable material for fuel. The handling of it is no longer not only not an expense, but is a source of revenue to the city, since a contracting company more than pays for the collection of it for the permission to take out of it any material that may seem of value. The residue is now being used for heating purposes and will surely prove of value. Even after the rubbish has been burned the residual ash has such a high potash content that it is an extremely valuable material.

Disposal of Ashes.—On February 14, 1902, the department began to dump ashes into an open crib near Riker's Island for the purpose of increasing the size of the island. Sixty-three acres have so far been reclaimed from the ocean very effectually, though certain problems have had to be solved that were unexpected. The East River is deep and clear, and has little mud but a strong tide. The setting in of this tide makes work difficult at Riker's Island, and on one occasion, at least, caused considerable damage to the construction work there carried on. The distribution of ashes and the leveling of new-made ground is confided to convicts, the labor being cheap, but quite as poor as it is cheap. The convicts employed are mainly the tramps and vagrants. Belt conveyances are employed to distribute the ashes at a distance from the barges, and so far there has been excellent results obtained from them.

Street Bacteriology.—By exposing agar plates at varying heights from the ground, Dr. Woodbury succeeded in getting bacteriological maps of the atmosphere in the most thickly settled district. Hester, Rivington and Oak streets gave so many bacteria after thirty minutes' exposure that not more than fifteen minutes of exposure could be employed and even then many hundreds of bacterial colonies developed on each plate. Exposures of the same kind made on upper Fifth avenue and Madison avenue gave very few bacteria and only a few molds. Pell Street was found reasonably clear of bacteria, though containing a number of molds in the atmosphere. John Chinaman is not unclean, though the presence of organic products in his neighborhood when living in thickly settled districts may invite the presence of molds. Mulberry Street, in the Italian quarter, gave an uncountable number of colonies after fifteen minutes' exposure and a single hour's growth in an incubator. Washington Market proved to be nearly in the same condition and the photograph of the plate taken shows what danger there is in the exposure of moist food products in the air under such circumstances. Many food materials are almost as good nutrient media for bacteria as agar is. As a rule the number of bacteria are directly proportional to the denseness of population in a given neighborhood. As a rule, too, these thickly populated districts fairly swarm with children. This adds to the danger to the health of the individuals because the population contains such a large proportion of the young non-resistive elements. It is not an unusual thing on the lower East Side to have 20 families to every 25 feet street front, and these 20 families will number at least 50 children among them. This gives a better idea for the necessity of cleanliness in these thickly populated neighborhoods and for the special vigilance of the Street-Cleaning Commissioner, if the Board of Health is not to have its work greatly added to.

Utilization of Rubbish.—An experimental plant for the separation of whatever useful materials there might be in the rubbish collected in the street-cleaning departments and the burning of all inflammable material has been established at Forty-ninth Street. This furnishes enough heat units to supply lights for the stable at Fifty-second Street, leaving a large surplus of heat to be wasted. The bill for lighting this stable before was nearly $6,000 annually. This is a direct saving. It formerly cost the city about $500 a week to get rid of this material, while now the revenue from those who have the opportunity to select whatever useful material there is in it is $250 a week. When to this is added the new saving in the matter of lighting the city will find this material an important source of revenue.

Experimental Work.—This is only experimental as yet, but there is no doubt that on a large scale it will prove even more lucrative than has been represented. The plant is situated on a dock over the river, it is inefficient according to our present scientific knowledge; it is not well located; it is not industrially well arranged, yet at the present time it is actually saving the department over $10,000 a year. This gives some idea of how much can be accomplished when the problem is approached scientifically. It is surprising how much of the waste material can be used over and over again. Even the tin cans that form so large a part of the rubbish collected by the street department are now shipped to a factory on Long Island, where, by means of heat, the solder and tin are melted off to be again utilized. Even the steel plates are not entirely useless and are used for roofing purposes and other objects.

Problem of City Lighting.—One of the largest items of expense which the city government has at the present is that of lighting. There is no doubt that much of this can be supplied by plants erected in connection with the rubbish disposal plants. As a consequence of this, too, the boxes and barrels, the floating material of various kinds that formerly used to be taken down the bay and, after dumping in the ocean, floated back with the tide to be scattered over the beaches, making an unsightly condition and a very unhealthy state of affairs for the bather, can be destroyed under absolutely aseptic conditions and their usefulness as fuel is easy to understand. Of course, during the two years that Dr. Woodbury has been in charge of the department only a beginning of this scientific treatment of refuse has been instituted. The new administration, however, will find this beginning of such a nature that they can easily raise a superstructure of important retrenchment for the city within the department of the Commissioner of Street Cleaning.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

Section on Clinical Medicine and Surgery.

Stated Meeting, held Friday, November 6, 1903.

A Study of 337 Cases of Enteric Fever in Children.—Dr. S. S. Adams, of Washington, D. C., reported his series of cases from the Children's Hospital of Washington. The clinical features of enteric fever in children have been variously interpreted, the typhomalarial cases having been at one time excluded and at another included under this diagnosis. Dr. Adams' experience has led him to doubt the immunity of children to typhoid fever, which is claimed by some authorities. The majority of his cases occurred in the late summer months, and they differed only in degree from the adult cases. Epistaxis occurred in 50 per cent. Of 210 cases, 31 had hemorrhage, and 18 died. Mental changes were often present, one case of fatal hemiplegia and 6 of posttyphoid insanity being noted. In 75 cases the diazo-reaction was positive and in 4 cases (all fatal) cancrum oris occurred. Thirty-seven cases showed typical lesions post mortem, and in 11 there were perforations. The fever was usually remittent in type and fell by lysis. Rose spots, though often observed, were less common than in adults and bed sores were seldom seen. There were 32 relapses in the series and of 70 cases in which the Widal was tried 50 were positive. The mortality for the whole series was 14.2 per cent., but of the cases occurring since 1899 the mortality was 10 per cent. The general management of the cases was, in recent years, about the same as that of adult cases. Hydrotherapy was used quite freely and intestinal antiseptics discarded as useless after fair trial. During the period when the Brandt treatment was used the mortality was about 11 per cent.

Dr. Atkinson said that in the typhoid fever of children the absence of rose spots, the presence of constipation rather than diarrhea, and the mild course are the most striking features. The temperature is usually easy to control and should be treated with baths and not with antipyretics.

Dr. Osler said that there can be no question of the immunity of *young infants* to typhoid fever. Dr. Griffith, some years ago, could only find 300 odd cases in the whole literature. It must be remembered that children's hospitals, like the one where Dr. Adams' series of cases was treated, function as "dumping-grounds" for the community, and the worst cases, therefore, occur in them. This explains the relatively high hospital mortality. Dr. Platt mentioned the features of about 90 cases of typhoid fever occurring in a children's hospital in Baltimore. The treatment was expectant, no antipyretics were used, and the cases were, as a rule, mild. Constipation was almost always present. A case of typhoid fever was reported in a seven months' old child taken from a mother with typhoid. Dr. Apt's series of 200 cases of typhoid in children was reviewed. One hundred and ninety-eight gave a positive Widal, 55 showed rose spots, 2 had perforation, and 10 per cent. relapsed. The general opinion was that the typhoid fever of children in Baltimore is milder than the disease in other cities. Dr. Adams said that his series included every death during the course of the fever, no matter what the cause, 4 cases of undoubted typhoid having died of tuberculosis. Severe cases are undoubtedly seen, but so long as the fever remains within bounds and mental disturbance is absent little treatment is needed.

The St. Louis Hospital, of Paris.—This hospital, founded by Henry IV. in 1657, is now a great medical center for the study of syphilis and skin diseases. Four things make this true—First the enormous number of patients, second the character of the men on the hospital staffs, third the liberal laboratories, and fourth, the splendid museum and library. The wonderful St. Louis collection of models of skin diseases is of great use to any one interested in this department of medicine. All of these are life-like, but the models of the various forms of drug rashes and of the erythemas are particularly good. The great Foulard library, with its perfectly complete collection of works in all tongues, dealing with syphilis and skin diseases, is easily accessible to students.

Congenital Dislocation of the Hip.—Dr. Platt showed a case of this affection. The patient was a girl of ten years, who, a few years ago, had shown only a slight disability of the hip. This had since become much worse and telescoping of the limb had occurred. The case showed two characteristic features of congenital dislocation—free rotation of the head, the trochanter remaining almost stationary, and the failure of the lumbar spine to move with any motion of the affected leg. The ligamentum teres was probably absent in this case and the open operation was advised by Dr. Platt.

Meeting held November 20, 1903.

Blastomycetic Dermatitis and of Epithelioma of the Nose Cured by X-ray Treatment.—Dr. Gilchrist exhibited this case.

Treatment of Bow-Legs and Knock-Knee.—This paper was read by Dr. R. T. Taylor, who said that in the treatment of rachitic deformities braces have been found expensive, tedious and uncertain. Three operations may be done: Osteotomy, osteoclasia and epiphyseal lysis. The real cause of these two conditions is an abnormal curve of femur, tibia or both, and not a lengthening of the internal condyle as the text-books say. The aim of the treatment is "centric correction"—that is, an operation performed at the apex of the deformity. Osteotomy has given good results in aseptic cases, but infection has occurred and has caused serious trouble. Osteoclasia is quickly done, is free from the dangers of sepsis, never results in delayed union and leaves a hinge of bone which keeps the fragments together when healing. A new osteoclast working on the lever principle was presented. It was claimed to accomplish its purpose almost instantaneously, and therefore to require little anesthesia.

New Method of Recording Rotation in Lateral Curvature of the Spine.—This subject was also presented by Dr. Taylor. The patient was placed on the stomach, a yard stick laid over the back with the middle point at the spinous process of the vertebra, and the angle made by this stick with the line of the floor measured by means of a right-angled triangle graduated for the purpose.

Dr. Platt, in the discussion, said that after the fifth year the bones harden and braces are useless, but good results are obtained before this age. Later operative procedures must be resorted to. Osteotomy is usually the preferable operation, and must always be done in the sabre-shaped deformities with forward bend. Many cases of bow-legs are seen in children and few in adults and probably nature cures many of these patients.

Dr. Taylor said that knock-knee may be outgrown, it is true, but one cannot prophesy in any given case, and so have no right to trust to it. Epiphyseotomy, though mentioned as an operation, is really impossible. Blanchard tried it in several cases, but he always got a tear of the lateral ligaments of the knee and of the biceps tendon.

Brisement Forcé Treatment of Clubfoot.—This was the subject of Dr. Sidney M. Cone, who said that

modeling methods in orthopedic surgery are based on Wolf's principle, that the structure of bone is modified by the function which it has to perform. Wolf was a German engineer who became a surgeon, studied carefully the mechanics of bone deformity, and left very careful photographic records. In his treatment the affected limb is put up in plaster and molded while this is soft. Two weeks later the position is further corrected by a second molding, and by repetition of this process the required position of the limb is finally obtained.

Dr. Taylor, in discussing this paper, said that Wolf's work ought to lead to the abolishment of the pernicious treatment of clubfoot by operative removal of bone.

Dr. Platt said that many surgeons do remove bone to correct this deformity, and the results are good, though, of course, not perfect. The procedure is, however, a rational one.

Dr. Cone said that brisement forcé ought to be used preferably in young cases, but Lorenz tried it first in a man of twenty-eight years with perfect results.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held at the New York Academy of Medicine, November 9, 1903.

The President, Andrew H. Smith, M.D., in the Chair.

The Treatment of Lobar Pneumonia.—A discussion of this subject constituted the scientific business of the evening. It was opened by Dr. Glentworth R. Butler. He said there were few diseases in which the prognosis is so variable in the individual case. Recovery will occur in some under any circumstances; others prove fatal no matter what treatment is adopted, and in a third group the outcome is apparently dependent upon the timely and energetic use of accepted therapeutic methods. Yet the general mortality varies little from decade to decade, while the incidence of the disease, in consequence, it is believed, of the prevalence of epidemic influenza, is increasing. There is as yet no specific for lobar pneumonia. The statistics regarding therapeutic methods are peculiarly liable to error because of great natural variations in the mortality rate which are largely dependent on three conditions: (1) age; (2) the presence of previous degenerative or other disease, particularly of the heart and kidneys; and (3) the varying virulence of the infective agent. There is no unanimity of opinion respecting the use of antipneumococcus serum, and in all probability the specific treatment for the disease will be found in the discovery of an antitoxin which will counteract the toxemia of the disease, although it is contended by some that lobar pneumonia is not a bacterial unity and may be caused by other pathogenic organisms than the pneumococcus of Fraenkel. A common fault in considering the treatment of this disease lies in an insufficient appreciation of the very considerable natural variations in the duration of the attack. As it is quite impossible to forestall the probable duration of the individual case, the claims of certain over-enthusiastic observers who profess to have aborted the disease must, perforce, receive the Scotch verdict, "Not proven." Owing to the variable elements referred to, few diseases require a larger number of cases to furnish reliable therapeutic data, so that statistics, to be really trustworthy must be based upon thousands, rather than hundreds, of cases, all subjected to the same treatment, under approximately similar conditions. Dr. Butler did not wish to be considered as advocating therapeutic nihilism; on the contrary, he believed it criminal to allow a grave case of pneumonia to sink to a fatal termination without the use of remedies and measures which have, so far as human judgment can determine, more than once turned the scale in favor of life.

Routine Measures and Precautions.—In considering the therapeutic management it is convenient to consider first the mild and uncomplicated, second, the severe or complicated cases. It should not be forgotten also that by the development of grave symptoms a case of the first class may shift into the second. There are certain routine measures and precautions which are required in every case, whether mild or severe. The room should be especially well-ventilated in order that the laboring lungs may receive air containing the maximum percentage of oxygen. Nothing is gained by the overload of bed-clothing so commonly seen, and personally he has long since discarded the pneumonia jacket in this form of the disease, unless when especially requested. The objections are that too much bedclothing or swathing the trunk in cotton tends both to keep the fever at a somewhat higher point than would otherwise be the case, and also adds materially to the discomfort of the patient. It is desirable that the body clothing, which should be of medium thickness, should be so arranged (by splitting part way up the back, if necessary) as to permit physical examination with a minimum of disturbance to the patient. Undue physical diagnostic zeal is to be avoided. Other points of importance are: Absolute rest in the recumbent position, with the use of the bed pan and urinal, and the free and regular giving of water, plain or mineral, both for eliminating toxins and keeping the renal tubules flushed out. For the latter purpose 8 to 16 ounces of normal saline solution by the rectum is also often of service. The diet should be that usually given in fever. In speaking on this point he said that one or two ounces of lactose daily, tasteless and easily soluble in most fluids, is a really helpful food, and may furnish many needed calories. Medicinally, at the onset of every case a small dose of calomel is of benefit; also a dose of 7 or 8 grains of quinine, given preferably by hypodermic injection, and repeated the following day.

Creosote Carbonate.—Creosote carbonate is a remedy in which he feels a certain amount of confidence. While he could not say that in any case the duration of the disease was shortened, under the use of this drug it tended to run a milder course, the temperature-curve, instead of remaining persistently high, dropped a little from day to day until at the time of crisis it had but a comparatively slight distance to fall to the normal or below. Also, there was apt to be a distinct diminution in the intensity of the toxemic symptoms, less delirium, less tremor, less cardiac weakness, and less meteorism. While it is impossible to believe that creosote acts as a germicide in the blood and tissues, he said, these results (noted in about forty cases), if confirmed by sufficient additional observation, are suggestive of a possible autotoxic action of the remedy.

To Relieve Pain and Cough.—Pain should be relieved preferably by a mustard draft, poulticing, or the ice-bag; using also, if necessary, morphine hypodermatically or Dover's powder by the mouth, in the smallest doses that will accomplish the desired purpose. In rare instances a tight chest bandage is efficacious. For irritating cough, steam inhalations of menthol and benzoin may be employed. Narcotics are to be avoided, if possible, but morphine and Dover's powder are often necessary. The treatment just outlined is all that is required for mild cases.

The Treatment of Severe Cases.—Delirium, restlessness and persistent insomnia may require one or more of the following: trional, bromides, Dover's powder in small doses, chloral (10 grains) cautiously, cam-

phor, hyoscine hydrobromate ($^1/_{100}$ gr.), with morphine ($^1/_8$ gr.) hypodermically, and the ice-bag to the head. Hyperpyrexia. Unless the temperature is continuously at or above 105° F. it is probably not worth while to attempt to lower it. The hypodermatic use of quinine is helpful; also the ice-bag to head and chest. The employment of the cold tub is unjustifiable, except occasionally in children, but the cold mitten rub has given excellent results not only in reducing temperature, but also because of its tonic action upon the nervous system. This may be repeated at intervals of from three to six hours when the temperature remains persistently at 105° F. or higher. In the first rub the water employed may be at 85° F., the second at 80° F., the third at 75° F.; subsequently not below 65°. Tympanites, which is an extremely undesirable occurrence because of its mechanical interference with the action of the diaphragm and heart, is probably less liable to occur when creosote carbonate is regularly given. When it appears, the following measures may be employed: Cutting down the nourishment (not the water) one-half, or suspending it altogether for twenty-four hours; a moderate dose of calomel and soda; enemata, plain, or containing turpentine, musk, or milk of asafetida; the use of the rectal tube. To stimulate the muscular coat of the bowel the following are useful: momentary intermittent rubbing of the abdomen with an ice-water cloth; 20 grains of quinine bisulphate and one-fiftieth grain of atropine by enema, or half these doses hypodermatically; $^1/_{120}$ of a grain of eserine sulphate by the mouth every four to six hours. The latter is especially recommended.

Oxygen.—Cyanosis, when arising from restriction of the respiratory movements in consequence of pain, is lessened by relief of the latter; when due to cardiac weakness or pulmonary edema it requires treatment of the special cause. Dr. Butler is a believer in the use of oxygen, in spite of the many contrary criticisms, because he has found in a majority of cases that when properly given it lessens cyanosis, slows the respiration, and affords a distinct sensation of well-being to the patient. The ordinary inhaling mouth-piece should invariably be replaced by a glass funnel of three or four inches diameter, and the latter should be held, an inch or so away, over the nose and mouth. Small doses of oxygen at frequent intervals are best. It is well to direct the nurse to allow the bubbles of gas to come about at the rate of 150 per minute, thereby avoiding useless waste of a somewhat expensive commodity.

Cardiac Weakness.—Cardiac weakness is perhaps the main source of danger in pneumonia. Circulatory impairment in the early stage of the disease is in all probability due for the most part to the depressing effect of the toxemia on the central vasomotor apparatus; in the later stages and during convalescence, to acute myocardial disease. Strychnine, the muscle energizer and central vasomotor stimulant, is a remedy of the first value. One-fortieth or one-twentieth grain, or even more, should be given every two hours, and it should be administered hypodermatically if prompt action is desired, or if there is the least doubt as to its absorption by the stomach. Next to strychnine is caffeine, either in the form of the citrate, or, better, as strong black coffee—one to two ounces every two to four hours. Brandy, whisky, the stronger wines, camphor, and aromatic spirit of ammonia are useful adjuvants; digitalis, nitroglycerin, strophanthus and sparteine may be given in full doses. An occasional dose of atropine and quinine bisulphate hypodermatically is of service, and the rectal administration of strong coffee with whisky or an emulsion containing 30 grains of musk may be called for in urgent cases. The possible usefulness of the powdered suprarenal, or its active principle, should also be borne in mind. Swathing the thorax in flannel wrung out of hot mustard water is often advantageous. The use of morphine in small doses ($^1/_{50}$ to $^1/_{12}$ grain, repeated or increased according to circumstances) will accomplish results obtained by no other drug; quieting and soothing the patient and steadying and improving the action of the heart. Especially if constipation, flatulence, or edema be present, calomel and compound jalap powder, in full dose, may act very happily; or some saline may be substituted. The subcutaneous administration of a pint or two of normal salt solution is a resource not to be neglected in grave cases.

Pulmonary Edema.—This demands in particular repeated dry cupping, hot mustard fomentations, calomel and jalap, large doses of nitroglycerin, moderate doses of atropine, and the free use of oxygen. The judicious physician will constantly endeavor to carry through the individual case with watchful expectancy, the least possible of meddlesome therapeutics, and the careful conservation of the patient's strength. While, however, giving as little active treatment as the case will allow, he will not hesitate to employ the most active and vigorous treatment when it seems indicated, making use of every measure which clinical experience has proved to be of value, though even slight.

Creosote and Quinine not Beneficial.—Dr. A. A. Smith said he was thoroughly in accord with most of the views advanced in the paper. His experience with creosote, however, was of a character contrary to that of Dr. Butler. In his hands it had proved of no benefit whatever, with the exception of cases where the disease was confined to one lobe and there was a general bronchitis present. He had also found it useful, in small doses, in tympanites. Neither could he endorse the use of quinine, except it might be on account of the presence of occasional special conditions, and stated his conviction that in the large doses in which it was formerly given the depressing effect of this drug had sometimes led to fatal results. Like Dr. Butler, he advocated the use of oxygen, and said that he had often seen good results from it when there were cyanosis, pulmonary edema, etc. There appeared to him to be certain objections to the mitten rub. These were purely clinical, such as disturbance to the patient. For the application of either cold or heat he preferred the use of flannel wrung out of water and constituting a compress. To serve the best purpose it was necessary that it should be applied to a large surface of the body, and he believed that this measure was a valuable respiratory and circulatory stimulant, and, above all, a marked nervous sedative. Recently, he had obtained good results by keeping the flannels at a temperature of 90° F.

Cardiac Weakness.—Personally, he was a firm believer in the very pronounced influence of the nervous system in producing cardiac weakness, and he thought it was through this that we could best afford support to the heart. It was through the agency of the nervous system that strychnine was so beneficial. Alcohol was apt to be given too early and too freely. It should be administered in moderate quantities, and in the majority of instances was not required at all. It was of great value, however, in cases occurring in chronic alcoholics, and here it should be begun very early, as the active delirium apt to be met with in such cases has a most disastrous effect upon the nervous system. Nitroglycerin was a great aid to other remedies, such as strychnine and caffeine, and was absolutely safe.

Dr. George L. Peabody thought the treatment might be divided into (1) an intelligent symptomatic treatment, and (2) an attempt at a specific or definite treatment. As to the first, delirium seemed to him one of the most troublesome and grave symptoms, and in his

experience delirium with high fever could not be well treated by means of drugs. These were greatly inferior to hydrotherapy, and although Dr. Butler considered it unjustifiable to put a pneumonia patient in the tub, he believed that he had convinced several generations of hospital internes that the cold bath, precisely as used in typhoid fever, was the best treatment for raving alcoholics with high temperature. If this method seemed too heroic (the patient being very feeble), or if there were delirium without sufficient fever to justify the cold bath, he was accustomed to use the cold pack, for which he thought linen greatly superior to woolen or cotton. In speaking of specific treatment he said that he quite agreed with Dr. Butler as to the necessity of a very large number of cases in order to arrive at any definite conclusions. He would only give his experience with a limited number for what it was worth. He had been favorably impressed with the salicylates. Aspirin was an excellent way of giving salicylic acid. Under its use patients appeared to stand the disease better than otherwise. Crisis was uncommon; lysis the rule. During February, March and April, 1903, he treated 43 cases with creosote carbonate. In these lysis was noted in 48 per cent., and crisis in 21 per cent. Thirteen patients, or 30 per cent., died. He was not yet convinced that we have any specific for pneumonia. At present he considered it the best plan to employ an intelligent symptomatic treatment, in addition to the administration of one of the so-called specifics.

Venesection.—Dr. Herbert F. Williams said there was one measure which, when properly used, outweighs everything else in importance. By venesection the overburdened heart is relieved, the blood robbed of an appreciable quantity of exudation product, and the pneumonic process thereby limited. It is most apt to be called for in the robust and well-to-do, whose fund of health seems contributory to the intensity of their pneumonia. The statistics of our fathers in the treatment of such cases, he thought, would not suffer in comparison with those of their sons. In lesser pneumonias, even lobar, pain is often an early and obstinate symptom, and can be relieved better by other means than opiates. The seat of the pain is in the pleuræ, and by a unique anatomical and physiological association of the cutaneous intercostal and visceral nerves we can influence the circulatory condition in the pleuræ by directing the current towards the surface. This is the *rationale* of the law of counter-irritation, and, as applied to pneumonia, it cannot be better secured than by wet cupping directly over the inflamed point. The contingent effect of the immediate relief from pain thus afforded may be more radical upon the pneumonic process than one would lightly suppose; for the relief of pain permits a full inspiration. He had often seen a bronchial respiration thus reduced to bronchovesicular, and believed that wet cupping was not only a safe, but a mandatory, procedure in early pneumonia.

The Failure of the Right Heart.—Dr. C. F. Wainright said that as it was the right heart which failed, the pulse did not afford an adequate indication of the true condition, and dwelt upon the cardiac results of sepsis. There was an effort made at compensation, and the evidence of the condition of the heart (with stagnation of blood in the right ventricle) was seen in dyspnea, edema of the healthy lung, and prune juice sputum. Calomel was of great service in unloading the portal circulation, and was also one of the best remedies to dilate the peripheral vessels. Nitroglycerin or sodium nitrate might also be employed for this purpose. If the heart had not been previously enfeebled, digitalis and strophanthus were called for.

The Prevention of Pneumonia.—Dr. H. W. Berg said that the disease could be prevented. It was now pretty well established that pneumonia is an infectious disease; we could even go a little further and call it a contagious disease. He had known of instances in which two or three cases occurred in the same family, and in his service at the Willard Parker Hospital it was his practice to separate the diphtheria patients who had pneumonia from the others. He thought that in pneumonia the same precautions should be taken as regards sputa, bed-clothes, etc., as in pulmonary tuberculosis; also that the healthy members of the family should not be subjected to the risk of contracting the disease.

Differences Between Pneumonia in Adults and in Children.—Another point to which he desired to call attention was the great difference between the pneumonias of children and of adults. Bronchopneumonia was a very serious disease in children. Croupous pneumonia was much less serious in them, and in this form of the disease his recoveries had amounted to 98 per cent. The child heart was much less susceptible to the deleterious action of the pneumococcus than the adult heart. In children there was one method of treatment that was very efficacious—namely, the cold pack (not the wet), applied every half-hour, or even quarter-hour, if necessary. He did not dare employ this in adults, except sometimes for the purpose of relieving pleuritic pain. He believed that the use of morphine was injurious in pneumonia, drying up the secretions and diminishing the chances of recovery. He would consder it justifiable only when necessary to relieve pleuritic pain.

SOCIETY OF GERMAN PHYSICIANS.

Seventy-fifth Annual Meeting, held at Kassel, September 20-26, 1903.

Portals of Entry of Plague Infection.—Contrary to a good many physicians, Schottelius believes that the plague germ is rarely inhaled, but generally enters the system through some loss of continuity of the skin. The local lesions are frequently small, and may readily be overlooked. Occasionally the infection starts from small cracks in the mouth or isthmus of the fauces. The infection of the lung is secondary to implication of the deeper cervical glands. The white race is relatively immune, and only poorly nourished individuals are apt to become affected.

Treatment of Articular Rheumatism with Antistreptococcus Serum.—Subacute cases which have resisted other treatment are especially benefited by serum, which has not, however, any specific action, according to A. Schmidt. Fifteen to 20 c.c. are injected daily for eight days in the region of the joints. The more distinct the reaction, the more likely the patient will be benefited.

Chronic Interstitial Pneumonia.—Damsch describes a slow, chronic pneumonia, non-tuberculous in character which leads to increased rigidity of the lungs without contraction or the formation of bronchiectatic cavities. Fever is generally absent, and the chief danger lies in displacement or relative insufficiency of the heart.

Roentgen Rays in Carcinoma of the Breast.—A remarkable case is demonstrated by Kronfeld. The carcinoma had ulcerated and formed multiple metastases in the skin and axilla, so that operation was excluded. After the third treatment the severe lancinating pains diminished and the ulcer stopped secreting. Four months later the entire tumor was replaced by scar tis-

sue, and the patient's condition had improved remarkably.

Urethrism.—A spasm of the urethra, similar to vaginism, is described by Ziemssen. The treatment consists in slow dilatation with injection of water into the bladder.

Leucocyte Count in Appendicitis.—Rehn believes the practice of counting the white cells to determine the pathological condition of the appendix superfluous and even dangerous, since valuable time is lost. Even when the figures diminish rapidly, pus may be present in large quantities.

Rare Symptoms of Ectopic Testicle.—A boy thirteen years old gave all the typical signs of appendicitis and was treated for such. The following day, Wohlgemuth was surprised to find the patient completely recovered. The symptoms had been caused by an ectopic testicle which had forced its way through the inguinal canal.

Intussusception.—Braun believes that acute invagination is due to a spasm of the intussusceptum and not to a paralysis of the intussuscipiens. The diagnosis is generally easy; healthy children are suddenly seized with tenesmus, vomiting and bloody diarrhea and lose ground rapidly. The tumor can often be felt. Chronic invagination is recognized with difficulty. The only effective treatment is operation. Acute cases should be operated so early that desinvagination is possible; for chronic cases entero-anastomosis is to be preferred. Resection gives good results only in adults.

Kredel was unable to reduce the invagination and prefers resection, though all of his cases died. Nevertheless, operation is indicated, since spontaneous cure is extremely rare. Replacing the intestines is often very difficult, even if the dilated gut is incised. The very first day should be chosen for operation.

Treatment of Tuberculous Peritonitis.—In both exudative and adhesive tuberculosis of the peritoneum, laparotomy offers much better chances than puncture or expectant treatment, according to Thones. Only the latter is, however, indicated in florid phthisis.

Treatment of Purulent Peritonitis and of Fat Necrosis.—The danger of collapse in purulent peritonitis is best avoided by means of saline infusions; 3½ liters should be used at once and 20 liters on the following day. The results are also satisfactory in fat necrosis of the peritoneum.

Treatment of Congenital Dilatation of the Colon.—High enemata, puncture of the dilated intestines, enteroanastomosis, preternatural anus and resection have all been recommended for Hirschsprung's disease, but the value of each method has not been definitely settled, since the condition is very rare. Braun removed the sigmoid flexure in one case.

Tuberculosis and Pregnancy.—Tuberculosis is a very grave complication of pregnancy, and it is frequently advisable to induce abortion in order to save the mother. Though some patients do surprisingly well, a fatal hemorrhage may appear at any time. Veit recommends an accurate control of the body-weight. When the patient steadily gains, abortion is never permissible, when she loses, removal of the fetus will hardly check the morbid process. The important thing is to cure the tuberculosis before permitting the woman to become pregnant. Even where the parents are in advanced stages of phthisis, healthy children may be reared.

Contraindications to Marriage.—According to O. O. Fellner patients should not be allowed to marry if suffering from progressive pulmonary tuberculosis, laryngeal tuberculosis, mitral stenosis and other valvular lesions with loss of compensation, myocarditis, chronic nephritis and malignant tumors. In married women, subsequent pregnancies are contraindicated in severe chorea, mental disease, severe epilepsy, tuberculosis and Basedow's disease. Eclampsia does not interfere, since it rarely recurs.

Prevention of Tuberculosis.—The views of Behring are rather iconoclastic, for he believes that tuberculosis is always acquired by way of the alimentary canal. The infection always dates back to infancy, during which period the bacilli only too readily wander through the walls of the intestines. Bovine and human tuberculosis are therefore identical, and a curative agent obtained from the spleen of immunized animals is promised.

Relation of Functional Nervous Diseases to the Female Sexual Organs.—B. Krönig has frequently noticed that diseases of the sexual tract accompanied by severe hemorrhage and prolonged inflammation can set up neurasthenia in its typical form. Physiological function, such as labor, if rapidly repeated may also be responsible. Hysteria may have a similar causation. Sexual abstinence is of no importance in bringing about disease. Sexual abuse impairs the nervous system less frequently than in the male. The importance of slight lesions has often been overestimated; this is especially the case with lacerations of the perineum, movable retroflexed uterus and posterior parametritis. Certain symptoms, instead of being the cause, are merely part and parcel of the hysteria; this applies to dysmenorrhea and the vasomotor and trophic disturbances of the menopause. Neurasthenia and hysteria do not exclude local treatment; on the contrary, they may make this imperative, as in the case of fibroids with recurring hemorrhages which increase the severity of the symptoms. Conservative operations must not be regarded as severe psychical results when compared with those on other organs. In especially severe cases of neurasthenia abortion may be necessary, but castration is only justifiable if the woman is near the menopause.

Protection of the Fetus against Infectious Disease.—Most infectious diseases may pass from the mother to the fetus in utero, but the latter seems to have a high degree of immunity since the antitoxins pass through the placenta earlier than the toxins. W. Hahn points out that the powers of resistence vary considerably; in tuberculosis they are very high.

Treatment of Chronic Gonorrhea.—The reason why urethritis is so difficult to cure in women is because the follicles and ducts are generally infected. E. Falk, therefore, splits them and treats all the recesses with the Pacquelin. In the uterus, weak solutions of protargol or lysol are excellent. If exudates are found in the tubes an abdominal operation should be performed only if a general peritonitis has developed, or if a neighboring organ has been perforated. In other cases, the vaginal radical operation is performed, but where the tube lies close to the vagina it may be simply incised and irrigated.

Etiology of Kraurosis Vulvæ.—Jung looks upon kraurosis vulvæ as the end stage of a chronic inflammatory process which may be set up by gonorrhea, pruritis, tuberculosis or carcinoma.

Salivary Glands in Infants.—Contrary to most observers, Schilling could demonstrate the presence of an amylolytic ferment in infants nine days to six months old. The parotid and pancreas are also active at this age.

Peptonized Milk in Intestinal Disturbances.—Diluted, peptonized milk tried by Reinach in chronic intestinal derangements of children, did not prove a success, but acute disturbances were favorably influenced. Microscopical examination of the feces is an invaluable aid in determining how a certain preparation agrees with the child and the food should be so modified that neither fat, carbohydrate nor proteid appears in excess in the stool.

Enterocatarrh of Infancy.—Salge isolated the blue bacillus previously described by Escherich from the stools of a number of cases of severe acute enteritis with toxic symptoms. All attempts to demonstrate pathogenic properties by growing on different media and by animal experiments failed, however. The toxicity in the human body probably depends upon the production of acids.

Trophodermatoneurosis.—A new disease, noticed in female children between one and a half and three years is described by Selter. It manifests itself in marked psychical disturbances with profuse perspiration, sudamina and red swelling of hands and feet. The duration is three to four months, the prognosis favorable.

Size of Thymus Gland.—The thymus gland throws a distinct shadow upon X-ray plates, which, under normal conditions during infancy, is only slightly broader than that of the vertebral column. A hypertrophied gland was found by Hochsinger in 20 cases of congenital stridor, that is, a type of respiration, especially loud at the end of inspiration. A large thymus was also found in 23 of 32 cases of rachitis.

Laryngitis Aphthosa.—Aphthous stomatitis is generally harmless, but Zuppinger has seen several cases where it extended into the alimentary tract and larynx. In the latter location there may be decided danger of suffocation. The treatment calls for the energetic use of permanganate of potash locally, inhalation of steam and warm compresses to the neck.

Treatment of Constipation by Hypnotism.—By means of hypnotic suggestion the sluggish innervation of the intestines may be increased where all other measures have failed. Delius has not only relieved the immediate condition, but has accomplished permanent cures. Equally good results were obtained in functional diarrheas.

A New Carbonated Bath.—Fisch recommends his carbonated baths in which the carbonic acid can be accurately dosed so that a gradual increase is possible. They are indicated in chlorosis, anemia, circulatory disturbances and during convalescence.

Etiology of Fever.—Klemperer has conducted some experiments which prove that rise of temperature is not caused by albumoses set free by the disintegration of body-cells. Albumose obtained from yeast and freed from bacteria, never sets up fever when injected into animals. When allowed to stand until all the proteid is destroyed, small amounts are already active, which is probably due to tyrosin formed.

Portal of Entry of Tuberculosis.—In almost a thousand autopsies on children who had suffered from some infectious disease, only five cases were found here tuberculosis involved only the intestines and mesenteric glands. Almost 25 per cent. had tuberculosis elsewhere. Ganghofner uses these figures as argument that bovine tuberculosis plays only an insubordinate role in the etiology of human tuberculosis.

Surgical Treatment of Chronic Nephritis.—Both incision of the capsule and decapsulation are occasionally justifiable in chronic nephritis as they may be the only means we have of prolonging life. Rehn suggests great care in the selection of cases as the operation may hasten the end.

Regeneration of the Ligated Saphenous Vein.—Ledderhose has convinced himself repeatedly that tying the saphenous vein does not always cure varicosities of the leg. In cases that were operated a second time he noticed a complete regeneration of the excised portion.

Sterilization of Catgut.—v. Hippel finds that catgut preserved in an aqueous iodine-iodide of potash solution will be sterile in one and a half hours. The iodine absorbed by the catgut will exert an antiseptic action upon the wound. Absorption is not delayed and the strength of the ligature is not impaired.

Relation Between Diphtheria and Scarlet Fever.—Uffenheimer's investigations were inspired by the difference of opinion which still exists as to the frequency of true diphtheria in scarlet fever. In 182 cases of the latter disease there were 127 with membranes and of these, bacilli were found in 30 per cent. In 11 per cent. there was a primary diphtheria, in 16 per cent. scarlet fever and diphtheria appeared at the same time and in 3 per cent. the diphtheria appeared later. The first class gave the worst prognosis. Sometimes Loeffler bacilli were found with only slight follicular inflammation, while in the most extensive membranes they were occasionally absent. Compared with former years, scarlet fever with throat affection has increased, but the specific germ was found less often.

Ehrlich's New Reaction.—Neubauer has discovered that the red color which forms if urine is treated with a solution of dimethylaminobenzolaldehyde in hydrochloric acid is due to urobilinogen. The reaction is especially marked in pneumonia and some blood and liver diseases. Absence of reaction in icteric urine points to complete occlusion of the choledochus or hepaticus. Bile and feces will also react since both contain urobilinogen.

Alkaptonuria.—This peculiar condition is now considered to be a manifestation of faulty metabolism. Falta believes that in normal individuals the tyrosin molecule of albumin is also converted into homagentisic acid and then further decomposed. In alkaptonuria the process is not, however, carried so far so that this acid appears in the urine.

Salt and Fluids in Heart and Renal Disease.—From purely theoretical premises, Strauss thinks it more advisable to diminish the sodium chloride in renal dropsies, while in cardiac dropsy, restriction of fluid is more important.

New Method of Measuring Temperature.—Weintraub obtains a continuous record of temperature by means of small elements introduced into the rectum and connected by long wires with a galvanometer. Variations as small as one-twentieth degree could be indicated.

Action of Salts in Baths.—Formerly it was believed that salts pass through the skin and enter the blood stream, but Frankenhäuser claims that their action is purely physical. In a saline bath, patients are surrounded by a medium which diminishes the dispersion of warmth and the loss of water from the skin, and which thus favors a better cutaneous circulation.

X-rays to Determine the Size of the Heart.—The only correct way we have to determine the size of the heart is by transillumination. The X-rays fail to show an increase in size with different positions of the body, after exercise, baths or the ingestion of alcohol. In aortic insufficiency a much larger shadow is obtained. This is not influenced by baths, but digitalis diminishes it considerably. In nervous hearts Grunach found three different shapes. (1) Normal shape; (2) duck-shape, owing to cardiaptosis; (3) enlargement, with trigeminal pulse.

Chemical Test for Leucocytosis.—When a blood count cannot be done, E. Mayer recommends the guaiac test, since this will be positive if more than 19,000 white cells are present. With a very large number, the addition of turpentine becomes unnecessary, since a ferment, which has the same action, is dissolved out of the cells.

Treatment of Adhesions.—A 10- to 20-per-cent. solution of thiosinamin in glycerin and water as injection is recommended by Friedlander. Marked improvement in general and local symptoms followed in all cases. He suggests also trying the remedy in peritoneal adhesions.

Cutaneous Tuberculide.—J. Comby advises changing the name of lichen scrophulosum into cutaneous tuberculide since it is really a manifestation of skin tuberculosis. Measles and pertussis favor its appearance by mobilizing bacilli, which have remained hidden in the body. The eruption is very easily cured, but it is important to recognize it, since it generally indicates a latent tuberculosis in some other organ.

Action of Phosphorus on Rachitis.—In none of the cases of rachitis examined could Stoelzner detect any pathological changes traceable to the action of the drug. Its efficiency is not, however, disproven since all three cases were of the severest type.

Hereditability of Rachitis.—F. Siegert believes that heredity is one of the most important etiological factors of rachitis. In most cases the mother has suffered from the disease in her youth. Even if such children receive natural food, they will not be protected from the disease. Prolonged nursing and advanced age of the mother play no part. An infection as cause is excluded. The social evil and diseases of the digestive and respiratory tract are the most important predisposing factors next to heredity.

The Rachitic Hand.—The delayed and incomplete development of the nuclei of the carpal bones and their epiphyses is considered by F. Siegert typical for the rachitic hand. The epiphyses of the ulna are first affected then those of the radium, distal ends of the metacarpals. The hand is generally long and narrow, while in myxedema it is short and broad.

Recent Operations for Prolapse.—Frank states there is no best operation for prolapse since the local conditions vary with every case. The most severe cases are generally easiest to treat, since they occur at an age where uterus and vagina no longer play an important part. The steps in an operation for total prolapse are the same as for a hernia: Reduction, removal of the sac (the invaginated peritoneum), and closure of the ring and canal. Sometimes it is best to simply remove the uterus with the greater part of the vagina and pelvic peritoneum. The uterus is here pulled downward, the vagina incised at the level of the fundus and the vessels of the parametrium ligated extraperitoneally. The peritoneum is not incised, but the entire prolapsed mass is simply tied off with an elastic ligature, and then cut off like a polyp. The remainder of the vagina is removed from below and the fasciæ and muscles are reunited in a second sitting. With marked cystocele or rectocele, the bladder or rectal wall must be invaginated by catgut ligatures.

Ventrofixture and Vaginifixture.—Many gynecologists believe these two operations are not indicated if the patient is still liable to bear children, but v. Guérard emphatically states that this is not so, if the fixation is not too firm. With only two or three ligatures beneath the fundus, dystocia is improbable. In 57 births after ventrofixture, a recurrence was noticed only twice. In 51 the subsequent labors were normal, in 5 the forceps were necessary, and in one case there was severe atony. In 41 cases after vaginifixture, the forceps were applied four times. Abortions were not noticed more often than with normal conditions.

Hot-air Treatment in Gynecology.—Hot air is much more efficient for chronic pelvic exudates than hot water. Tuszkai could find no change in the physical signs, but the pain and other symptoms rapidly disappear and the patients are again able to work. Probably the exudates are not absorbed, but become chronic more rapidly. The temperature should be gradually increased up the 80 to 90° C., which can be readily borne without burning the parts.

Pathology of Ectopic Gestation.—An interesting contribution to the pathology of extrauterine pregnancy is given by O. Fellner. He finds that in the majority of cases the ovum is imbedded in a diverticulum of the tube and not in the tube itself. The musculature of these diverticula is generally so poorly developed that the ovum cannot be expelled. Unlike the mucous lining of the tube proper, that of the diverticula is unable to form a true decidua, so that the imprisoned ovum rapidly dies. Where a decidua has formed the pouch was probably so shallow that the mucosa of the tube proper invested the egg.

Source of Puerperal Infection.—In every clinic cases of puerperal infection will occasionally occur, despite the most careful asepsis. If pains are taken, the origin can, however, be traced in most instances. Thus Buttner speaks of the possibility of a simple angina being at fault. He has experienced an epidemic with six deaths, where the infection probably traveled from a sore throat.

Double Pregnancy.—v. Neugebauer demonstrated specimens from a case of combined intra- and extrauterine gestation. The ova were of different ages, the normal one being ten weeks old and the ectopic one fourteen to seventeen days. Though the right tube was found ruptured, both corpora lutea were situated in the left ovary. In looking over the literature, 129 similar cases were encountered.

Treatment of Uncomplicated Retroflexion.—The disturbances following retroflexion are usually due to cervical catarrh, endometritis or diseased adnexa, according to Koetschau. In many flexions, the uterine changes are responsible for symptoms and change of position both. A parenchymatous metritis will remain, and will continue to cause suffering, even if the flexion is corrected. But uncomplicated cases may also give rise to symptoms, such as headache, gastric pain, backache and habitual abortion. Treatment is, therefore, always indicated, especially since prolapse may otherwise follow.

BOOK REVIEWS.

Clinical Examination of the Urine and Urinary Diagnosis. A Clinical Guide for the Use of Practitioners and Students of Medicine and Surgery. By J. Bergen Ogden, M.D., formerly Instructor in Chemistry, Harvard University Medical School, Boston; Assistant in Clinical Pathology, Boston City Hospital, etc. Second revised edition. W. B. Saunders & Co., New York, Philadelphia and London.

Dr. Ogden's book, in its second edition, promises to prove even more useful to the practitioner than it was originally. Those familiar with it will recognize that this means much, since it is without doubt one of the most complete practical diagnostic manuals at present before the profession. It is exceptionally full and detailed, and the brief summary of diseases of the kidney in connection with the examination of the urine and urinary diagnosis makes it a very handy manual for the study of nephritic affections, since it does away with the need of further consultation, except in very difficult cases. The illustrations, especially those in colors, are very well executed and cannot but prove extremely helpful.

Diseases of the Skin. An Outline of the Principles and Practice of Dermatology. By Malcolm Morris, Consulting Surgeon to the Skin Department of St. Mary's Hospital, London. New Edition. W. T. Keener & Co., Chicago.

Dr. Morris' valuable little manual on skin diseases, though issued in its original edition only in 1898, has been out of print for some time. The writer has been

too busy to give the volume the attention he deemed necessary in order to bring it up to date. There is probably no other book of the same size in English that contains anything like the amount of information, in a very practical way, that is given in this. The index is especially valuable and is an important feature in the 600-page manual, particularly as it is arranged with special attention to cross references as regards treatment. Dr. Morris has always been a popular writer on this subject and his second edition will surely add to his reputation.

A COMPOUND OF HUMAN ANATOMY. By SAMUEL O. L. POTTER, M.A., M.D., M.R.C.P. Lond., Formerly Professor of the Principles and Practice of Medicine in the Cooper Medical College of San Francisco; Author of the "Handbook of Materia Medica, Pharmacy and Therapeutics," "Quizcompend of Materia Medica," "Index of Comparative Therapeutics," and "Speech and Its Defects." Seventh edition. Revised and enlarged. P. Blakiston's Son & Co., Philadelphia.

SINCE the publication of this work for the first time, twenty years ago, it has proven to be of so much help to a goodly percentage of students in nearly all the medical colleges of the country that it now, in its up-to-date condition, requires no introduction to the medical profession. Gray's Anatomy has been taken as a basis for the work, but the present edition has been entirely rewritten and Morris, Quain and other recognized authorities have been freely consulted in the preparation of it. Although clearness and conciseness are important and well-deserved characteristics of this volume, it cannot be rightfully urged that these qualities have been attained by the omission of the essential features of the subjects treated. It is well illustrated by tables, plates and diagrams, many of them appearing for the first time in this edition. The student cannot fail to appreciate the helpfulness of such a standard book, especially in his preparations for quiz and examinations.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, etc. By Leading Members of the Medical Profession Throughout the World. Edited by A. O. J. KELLY, A.M., M.D. With the Collaboration of Regular Correspondents in Montreal, London, Paris, Berlin, Vienna, Leipzig, Brussels and Carlsbad. Volume III. Thirteenth Series. J. B. Lippincott Company, Philadelphia.

THE present volume of the International Clinics is occupied in its first hundred pages with a symposium on diseases of the gall-bladder and gall-ducts. This subject is so up-to-date in its interest that it can scarcely fail to attract attention. Among the contributors to the symposium are Dr. Musser, of Philadelphia, who discusses the medical aspect of biliary disease; Dr. Rudolph, of London, Ontario, who discusses the symptoms and diagnosis; Dr. Charles Stockton, of Buffalo, who discusses the medical treatment; Dr. F. Parks Weber, of London, England, who presents biliary cirrhosis of the liver, complicated by cholelithiasis; Dr. Lejars of the Faculty of Medicine of Paris, who suggests the indications for surgical intervention, and Dr. John B. Deaver, of Philadelphia, who discusses the surgical and postoperative treatment. All of the papers are thoroughly clinical in character, containing many practical hints and without any waste of words.

A very timely clinical lesson in the present volume is that on the treatment of pneumonia, by Dr. David W. Finlay, Professor of Medicine in the University of Aberdeen. Among the contributions on the subject of General Medicine are articles on clinical types of pneumonia, with special reference to aberrant forms, by Dr. R. Murray Leslie of London, and sudden death due to respiratory disorder, by Dr. Thomas J. Mays, of Philadelphia.

THE PRINCIPLES AND PRACTICE OF HYDROTHERAPY. A Guide to the Application of Water in Disease, for Students and Practitioners of Medicine. By SIMON BARUCH, M.D., Professor of Hydrotherapeutics in the New York Post-Graduate School, etc. Second Edition, Revised and Enlarged. William Wood & Co., New York.

DR. BARUCH has done much to bring hydrotherapy into good repute here in America. The present treatise, now in its second edition, is the best evidence of the serious character and valuable influence of his work. It is to be hoped that his contributions to the literature of the subject will finally bring about what has been so long his dearest wish, the regular teaching of hydrotherapy in the medical schools. The present volume contains an epitome of the history of hydrotherapy, which shows very distinctly how the neglect of the subject, by regular practitioners, has constantly thrown it into the hands of quacks and charlatans, with consequent obscuration of the good in it, to the detriment of therapeutics generally. Certainly anyone who reads Dr. Baruch's book attentively will be convinced of the great possibilities for good that there are in exact hydrotherapeutics, applied according to proper indication. The book deserves a place on the shelves of every general practitioner of medicine.

SURGICAL ASEPSIS. Especially Adapted to Operations in the Home of the Patient. By HENRY B. PALMER, M.D., Consulting Surgeon to the Central Maine General Hospital, With Ninety Illustrations. F. A. Davis Co., Philadelphia.

THIS little volume contains in condensed form the conclusions which investigators on asepsis have reached and gives directions for their application in practice. It is designed primarily for those deprived of the hospital facilities afforded by larger cities, and should prove a reliable *vade mecum* to the man thrown upon his own resources in operating. Many ingenious adaptations of easily obtainable articles to eke out surgical emergencies are described and the author will no doubt earn many thanks from colleagues for whom he has made easier the difficult path of asepsis.

NERVOUS AND MENTAL DISEASES. By ARCHIBALD CHURCH, M.D., Professor of Nervous and Mental Diseases and Head of Neurological Department, Northwestern University Medical School; and FREDERICK PETERSON, M.D., President New York State Commissioner in Lunacy; Chief of Clinic, Department of Nervous Diseases, College of Physicians and Surgeons, New York. Fourth Edition, Thoroughly Revised and Enlarged. W. B. Saunders & Co., Philadelphia, New York and London.

IN four years this text-book of nervous and mental diseases has reached its fourth edition. This is of itself sufficient evidence of its general appreciation by students and practitioners. The present edition contains a number of valuable additions, among them paragraphs on intermittent limping, now known to be dependent upon a definite pathological lesion situated in the posterior root ganglia, and some paragraphs devoted to the form epilepsy associated with mild myoclonus, an affection that has in recent years attracted a good deal of attention under the name of the combination disease.

A very valuable feature of the present edition is a chapter by Dr. Adolph Mayer, the head of the pathological department of the New York State Hospital for

the Insane, in which he discusses the present status of insanity, according to the views of the best known European specialists. In recent years a great change has come over the method of writing text-books of mental diseases, and certain of the prominent German alienists have attempted a new classification of the insanities. The best known of these authorities, Kraepelin, Wernicke, Ziehen, and Mendel, have made various suggestions as to the rearrangement of nervous diseases in such a way as to make their recognition and study more assured. Few men are better fitted than Dr. Mayer to give such a review as this, and this chapter of the book is one of the most informing contributions to the literature of mental diseases in America that has been made in some time.

The Treatment of Certain Malignant Growths by Excision of the External Carotids. By Robert H. M. Dawbarn, M.D., Professor of Surgery and Surgical Anatomy in the New York Polyclinic Medical School and Hospital; Visiting Surgeon to the City Hospital, New York, etc. (The Samuel D. Gross Prize Essay.) F. A. Davis Co., Philadelphia.

This little book is an excellent testimonial to some good, original work of great value done by an American surgeon. There is no doubt of the wisdom of the trustees of the Gross Prize in conferring on Dr. Dawbarn's essay the distinction it so well deserves. The method of treatment of course must still be tried in a great many cases before its absolute worth to surgery can be decided. Even though it should prove eventually not an operation of choice, being replaced by some more successful method of treatment, there is no doubt that the work done on it will remain as a landmark in our knowledge of surgical operations upon arteries, and will be a source of valuable information of the blood supply of the face. In the meantime, for sarcomatous growths the treatment is surely hopeful. For cancer it furnishes relief from pain and lengthens life in comparative comfort. Nothing in recent years has done more, if as much, in the realm of these obstinate and so often hopeless affections.

Consumption a Curable and Preventable Disease. What a Layman Should Know About It. By Lawrence Flick, M.D., Medical Director of the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis. David McKay, Philadelphia.

Physicians are often asked how can a layman obtain a practical knowledge of the present position of the medical profession with regard to consumption, its cure and prevention. The best answer is to recommend a copy of this book. For charity workers, for nurses, for those who have relatives suffering from tuberculosis, for settlement workers, and visitors to slums, as well as for patients who are themselves suffering from tuberculosis there is no easier way of securing all the knowledge they need than by a perusal of this little volume. It has no technicalities; there is no waste of words. Dr. Flick makes many striking points. He discusses such questions as "Is Consumption Inherited?" "How Tuberculosis Is Spread," "Consumption as a House Disease, and the Rôle of the Workshop, the Store, the Office and Hotels and Boardinghouses in the Spread of Tuberculosis." At the same time he gives very encouraging answers as to how to avoid consumption, how to prevent its spread, how it can be cured in an early stage. At the end there is the discussion of the problems: "Should a Consumptive Marry?" and "Should a Consumptive Suckle Her Child?" The book will surely make a place for itself in the present crusade against tuberculosis.

The Surgical Treatment of Gastric and Duodenal Ulcers. By B. G. A. Moynihan, M.S. (Lond.), F.R.C.S., Eng., Senior Assistant Surgeon, Leeds General Infirmary; Consulting Surgeon to the Skipton Hospital, and to the Mirfield Memorial Hospital, etc. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.

The attractive personality exhibited by the author on the occasion of his recent visit to this country adds interest to the work in question as well as his eminence in the field of surgery it discusses. It is an ideal presentation of the results of one man's own work and the conclusions he has reached, and for systematic classification, clear-cut directness of expression and logical thought leaves nothing to be desired. The work is divided into four parts devoted to Perforation of Gastric or Duodenal Ulcers, Hemorrhage, Chronic Ulcer and Hour-glass Stomach. Under the first heading the author calls attention to the ease with which intestinal contents can reach the right iliac fossa in cases of perforated duodenal ulcer, and thus simulate, both before and during operation, acute appendicitis. In all cases of perforation it should be remembered that double perforation occurs in 20 per cent., the second ulcer usually being on the posterior wall of the stomach, exactly opposite the first, and the entire surface of the organ should, therefore, be scrutinized. In all cases of hemorrhage from a chronic ulcer operation should be performed at the earliest possible moment. Search for the bleeding points or excision of the individual ulcers, which are often very numerous, is not necessary; gastro-enterostomy will prevent further hemorrhage and lead to rapid healing of the ulcers. Duodenal ulcer rarely exists without the coexistence of gastric ulcer. The author advances the theory that duodenal ulceration occurs only, or at least most easily, with excess of free hydrochloric acid, and he believes the sequence of events to be gastric ulcer, hyperchlorhydria, duodenal ulcer. In performing his gastro-enterostomies the author has given up the use of mechanical aids and uses a simple and rapid method by suture, which is clearly described and figured. The consideration of hour-glass stomach, which follows, is of equal value and the statistical tables which complete the volume are valuable additions to the mathematics of the subject. Enough has been said to indicate the importance of the book, which will prove of interest to both medical men and surgeons.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Diseases of the Eye. By Drs. H. F. Hansel and W. M. Sweet. 8vo, 532 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

Compend of Gynecology. By Dr. W. H. Wells. Third edition, Demi 8vo, 293 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

A Manual of Bacteriology. By Dr. Herbert N. Williams. 8vo, 351 pages. Third edition. Illustrated. P. Blakiston's Son & Co., Philadelphia.

A Text-Book of Obstetrics. By Dr. J. C. Webster. 8vo, 767 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

The Clinical Pathology of the Blood. By Dr. Jas. Ewing. Second edition. 8vo, 495 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

Lessons on the Eye for the Use of Undergraduate Students. By Dr. Frank L. Henderson. 8vo, 205 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

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ORIGINAL ARTICLES.

PERIPHERAL NEURITIS. A CLINICOTHERAPEUTIC RESUME.

BY WILLIAM BROADDUS PRITCHARD, M.D.,
OF NEW YORK;
ADJUNCT PROFESSOR OF NERVOUS AND MENTAL DISEASES, NEW YORK POLYCLINIC; CONSULTING NEUROLOGIST, S. R. SMITH INFIRMARY, STATEN ISLAND.

THIRTY years ago, neurology was a comparatively unexplored by-path in the Mammoth Cave of medical research. Within thirty years, such gigantic strides have been made in this field as to make the net results of today seem almost miraculous. Brilliant as have been the achievements in localization, in brain surgery and in neuro pathology, no chapter in all this history is more marvelous in the sum total of practical results than that devoted to the study of neuritis. Beginning with the researches of Duchenne there followed in quick succession the investigations, clinical and laboratory, of Dumesnil, Jolly, Pitres and Vaillard, Bury, Leyden, Bowlby, Ross, and a host of others, the net result of which is a definite conception, with a correlated working basis, which places the subject unquestionably within the field of positive medical activities. We enter this domain of medicine today with the same confidence and assurance which marks the portals of surgery, gynecology, dermatology or any other special subfield of medicine. Because of the tremendous dimensions of the unrestricted subject, I shall limit myself to a consideration of the strictly clinical and therapeutic aspects of peripheral neuritis alone, leaving out of consideration altogether, the very inviting and interesting and important subject of multiple neuritis and also all questions of pathology and morbid anatomy. We shall find quite enough material in this restricted field to occupy your attention to the limits of tolerant patience. I have selected as the basis of what I shall have to say, the carefully recorded histories of six patients, taken from my case books. These patients represent six different clinical types of peripheral neuritis. These selected cases it should be remembered are more or less typical. The atypical and the anomalous should not be forgotten. I have endeavored in this paper to adjust general experience to individual variations and exceptions, as far as possible, but have quite probably fallen short in a relative estimate of the importance of the personal equation in every case of nerve trouble. The harm is less if you remember the acknowledgement and the implied emphasis which such acknowledgement places upon the fact.

Neuritis of the Seventh (Facial) Nerve.—This form which is very common, is attended with more or less marked motor paralysis, and is much more familiarly known as Bell's palsy. Other synonyms are rheumatic facial paralysis and car-window paralysis, the latter term being especially significant as to a frequent etiological factor, exposure to direct cold. The nerve is quite superficial in part of its course anatomically and but poorly protected from either trauma or cold. The importance of this form of neuritis is esthetic or cosmetic, and somewhat a matter of sex, rather than vital. In cases which do not recover the facial deformity from atrophy and asymmetry is almost tragic, if the patient be a woman. With face twisted awry, drooping, dribbling mouth angle, staring lagophthalmus and wasted muscles, the feminine victim of this form of neuritis, if it prove vicious, is a martyr indeed, and not very charitable, either, in her criticisms of the doctor who treated her, especially if she finds that he has been incompetent or negligent.

The most important first consideration in facial paralysis is the question as to whether the lesion is central or peripheral. If central, the case is infinitely more serious. Fortunately a mistake here is rarely made and is practically never excusable. In the central (brain) cases, the upper branch is infrequently affected, and if at all, only transiently, as a rule, and slightly. It is very uncommon for a cerebral lesion to pick out the facial center alone, sparing all others. If central and of the right face, there is almost necessarily aphasia in some degree and usually, even in lesions quite limited of the central or subjacent white fibers, there is associated implication of the arm of the same side, or of the arm and leg. Lagophthalmus is rare in the central cases, and so also is atrophy, though this latter fact is of less immediate importance, as it does not develop in any case until after a varying interval and the differential diagnosis must be made at once. The mode of onset is quite different, the central cases developing with apoplectiform symptoms, or at least with some general manifestations of cerebral disturbance. In the peripheral cases the patient quite often first discovers the paralysis on looking into a mirror, or from an unexpected dribbling of fluids in attempting to drink, or from an inability to whistle. The triple distinction of supranuclear, nuclear and terminal facial palsy is less vitally important though scientifically desirable. There is rarely, if ever, any sensory disturbance, unless the fifth nerve is simultaneously affected. This association paralysis of fifth and seventh is comparatively rare, although I have seen perhaps half a dozen examples.[1] It is quite often due to syphilis, which is very rarely a cause of Bell's palsy and is easily recognized by the additional symptoms of hyperalgesia and hyper-

[1] Read before the Richmond County (N. Y.) Medical Society, Nov. 11, 1903.

esthesia, followed by analgesia and anesthesia and by active and early trophic symptoms, particularly neurotrophic ophthalmia.

It is sometimes of importance to determine at what point the lesion in Bell's palsy exists and there are various signs, dependent upon the implication of certain branches, by which the anatomical extent of the disease can be determined. The prognosis, and to some extent, the conjectural etiology is dependent upon such determination. Practically it is sufficient to say in this connection, as regards prognosis, that if the analysis of symptoms points to a lesion outside of the stylo mastoid foramen, the prognosis is much better than if the lesion is within.

Case I.—A. B., aged thirty-six years, female, housewife, thin and anemic, family and personal history negative. Three weeks ago took an afternoon nap exposed to the draught of an open window. On waking noted a sensation of peculiar awkwardness and stiffness of left side of face, and on taking a look at herself in the mirror, found her face twisted awry, the left angle of the mouth drooping, with inability to close down the left eyelid (lagophthalmus). Three days later she reported at my clinic, and the following facts were noted. Motor paralysis, left side of face, all branches, no action of left corrugator supercilii, droop at left angle of mouth, some impairment of sensation of left side of tongue anteriorly (chorda tympani), hyperacusis left ear and no action of muscles of palatine arch, left side, on forced vocal expiration (requiring patient to say "Ah"). There is no disturbance of skin sensation, of the action of the ex- or intrinsic muscles of the eye and no implication of the arm or leg of the same or of the opposite side. The diagnosis is that of Bell's palsy, lesion within stylomastoid foramen, probably as high as the geniculate with a prognosis of recovery after two to four months active treatment. Considerable progress toward recovery has already occurred and she will ultimately and in all probability within the time limit already designated, make a good recovery, under the following plan of treatment: The face is massaged daily with inunctions of lanolin; the patient takes three doses daily of strychnine gr. $^1/_{25}$, quin. sulph. gr. 1, and sodii salicyl. gr. III, to which is added 5 gr. doses of Bland's mass and three times a week she is treated with galvanism. An Erb neck electrode 2 by 4 is applied back of the neck and to her left face is applied a flexible, adjustable Erb electrode, 2 by 4. Five to seven milliampères are introduced through the rheostat, and the seance lasts from ten to twenty minutes. Daily seances would hasten the result, and in obstinate cases, alternate seances with the interrupted current roller electrode or faradism, with a current of high tension, will prove advantageous, especially in controlling atrophy. It is at times of distinct advantage to use in these cases small doses (5 grs. t.i.d.) of potassium iodide. It seems scarcely necessary to add finally that in this patient's case all local etiological factors, such as aural or dental, or nasal disease, affections of the antrum and other similar conditions which would, if present, materially affect the treatment, have been excluded. An obvious etiology in any such local cause, invariably demands, of course, appropriate treatment.

Neuritis of the Sciatic Nerve, Sciatica.—The history of this case is as follows: In March, 1893, an attack of grip with severe throat and bronchial symptoms,[2] was followed immediately upon the subsidence of febrile symptoms by a sensation of tired, aching pain and quick fatigue in the right leg, the pain following the course of the sciatic nerve. A trip South relieved all symptoms except those involving disability and pain in the right leg. This leg became easily and quickly tired from any exertion and constant aching pain, plus a variety of abnormal sensations, numbness, tingling "pins and needles" and other paresthesia, developed. At home, at the theater, in church, anywhere, where the position was constrained, he felt this pain and these paresthesiæ. In May he presented the following symptoms: Pain, intensified by pressure, along the course of the sciatic nerve of the right leg, especially at the popliteal space and at the outer aspect of the ankle; slightly diminished power and some anesthesia in the area of cutaneous distribution; beginning atrophy as indicated by contrast measurements of the two legs which showed right middle thigh 17½, left 18½; right calf, 15¾, left 15¾; right ankle, 7⅛, left 7⅜. Bearing in mind the normal reversal of these measurements as between right and left, the continuous pain in an anatomically limited area, the paresthesiæ and other subjective symptoms, as well as the etiological history there was no hesitation in arriving at the diagnosis of sciatic neuritis, from infection. The following plan of treatment was at once inaugurated: Functional rest, as far as possible, the internal administration of quin. sulph. gr. 1, strychnine sulph. gr. $^1/_{40}$, and arsenious acid gr. $^1/_{50}$, t.i.d., with electricity in the form of galvanism, 5 to 10 milliampères daily, through the largest size Erb electrodes, one under the right foot, the patient sitting upon the other, the buttock being protected by a thick covering for the electrode. Daily massage, with lanolin as the emolient, was employed, very gently at first, all Swedish movements being avoided. Special importance was attached in the technique of electrical treatment, first, to a position of bodily comfort and non-restraint during the seance; second to a diffusion of the current by means of large electrodes; and third to an avoidance of shock or irritation effect by the invariable use of the rheostat. The meter should always be the guide as to quantity. This patient has practically made a complete recovery though still able on damp humid days, or after unusual fatigue, to tell the right leg from the left. Such a result, while by no means exceptional, is equally by no means the fixed rule. Sciatica is quite often a most obstinate affection and much more radical measures are often imperatively necessary.[3] The patient must be put to bed and

even more radical measures employed to enforce total physiological and functional rest. The long hip splint may be advisable. When applied, it should be adjusted so as to permit of the application of hot or cold (ice) bags along the course of the nerve or of actual cautery, a measure which is almost magically effective at times, especially if used early. With the patient in bed, the limb in a splint and a chain of ice or hot water bags as a cushion for the affected leg, acute suffering is often kept under control without more direct medication. Should drugs be necessary, as they often are in severe cases, do not waste much time with coal-tar analgesics or other compromise measures, but use morphine at once, hypodermically and in effective doses. It is infinitely more certain than the cocaine or osmic acid or water injections or needle punctures, variously recommended by Corning, Solis-Cohen, Bartholow, Starr, and others, and there is the further advantage that morphine need not be injected locally, whereas the other agents mentioned are dependent for effect upon a local and direct action, a procedure not without danger, as shown by the experiments of Pitres and Vaillard who have reported several cases of acute traumatic parenchymatous neuritis, the result of the employment of these methods. Phenacetin, antipyrin and other kindred drugs are sometimes transiently ameliorative, but disappointing in permanent effect. The salicylates, colchicum and the iodides are equally disappointing even when an associated rheumatic diathesis is evident. The sulphur pack, the castor oil plan and other empirical methods are always experimentally legitimate, especially in obstinate intractable cases, when the question of surgical interference by means of nerve stretching, section or other operative procedure forces itself upon your attention. In this connection, let me urge upon you, as a result of personal experience and a somewhat critical observation, the most extreme conservatism. Among other experiences, invariably disappointing and disastrous, I cannot easily forget a suit for damages which I once narrowly escaped. I had advised nerve stretching, as a last resort, in a most intractable sciatic neuritis. A very competent surgeon stretched the nerve by the open (operative) method, with the result that a painful disability became an absolute paralysis, and for many months the patient was dependent upon crutches for locomotion, the pain being no less, the last state of that man being infinitely worse than the first. Stretching the nerve by forcible flexion of the thigh upon the abdomen is less dangerous, but quite painful, requiring an anesthetic. Do not forget in all cases to examine the urine for diabetic or gouty states or lead, the blood for malaria and other parasites, the pelvis for tumors, uterine disease or other sources of intrapelvic pressure, the bones for hyperplastic inflammatory disease, the local blood-vessels for aneurisms or varicose dilations, any of which conditions may cause or aggravate a sciatica. Reflex irritation is infrequent, but one of the most severe and intractable lumbosacral neuralgias I ever saw was due to an undescended constricted testicle. Flatfoot may induce symptoms closely simulating sciatic neuritis, and I have known appropriate orthopedic treatment, or a change in the style or make of a shoe, to effect a cure quite promptly. In considering surgical measures, it is always well to bear in mind the vis medicatrix naturæ. A waiting policy quite often pays better than aggressive surgical interference.

Intercostal Neuritis.—Male, aged fifty-four years, of French ancestry and a most restless, nervous temperament. Thin, sallow, cadaveric almost in malnutrition, he tells a tale of marvelous endurance in various experiences. You know the type, the man "lives on his nerve." Now and then such men break down, usually mentally, sometimes motorially, less often sensorially. In this case, as in all therapeutic neurology, the equation of temperament, the nervous personal equation, is tremendously important, though often overlooked and quite as often misinterpreted. This patient tells me he has suffered from two previous attacks of neuritis, both involving the brachial plexus, one attack eleven years ago, the second five years later. I find from urinary analysis an intensely lithemic state. The specific gravity is 1.032, no sugar, but urea in extraordinary excess, 16 grs. to the ounce. There is also an excess of indican and microscopically, crystals of uric acid are abundant. Renal cells, traces of albumin, a few leucocytes and a few blood cells, with much mucus, are present as evidences of the mechanical irritant effect of these deposits. We know from pathological findings, that similar mechanical deposits within the nerve sheaths are not infrequently responsible for inflammatory interstitial affections of the intercostal and other nerves, an hypothesis which has always appealed to me. This patient's present attack developed three weeks ago. He was out fishing, got wet and wore his wet clothing for several hours. The following morning, he awoke with a stinging, burning pain in the right side, at the level of the sixth rib. The sensation was that of a red hot wire running under the skin from the middle of the back to the median line in front. Within twenty-four hours an eruption developed, linear in distribution and vesicular in character, corresponding to the line of pain. It looked like a line of angry blisters. The local physician, who was called in, made the diagnosis of "shingles" correctly, but failed to recognize the neurotic basis, and treated the case from a strictly dermatological standpoint. Salves, ointments and washes failed of relief, and the sufferings of the patient grew more intense. I was called in consultation at this stage. Aggravated insomnia, loss of appetite and extreme emotional instability and irritability had been added to the picture secondarily. Absolute rest in bed, gentle massage, forced feeding and galvanism were ordered and the following prescription was directed to be given every four hours: Sodii salicyl. gr. III, quin. sulph. gr. I, codeine gr. ¼. A lining of lamb's

wool fleece, which is rich in lanolin, was ordered to be basted as a skin side lining to the undershirt, over the affected area. A hypnotic powder of ten grains each of trional, sulphonal and sodii br. was ordered given in hot milk at bedtime. All symptoms, forty-eight hours later, were found to be worse. The nervous irritability, which was most intense and general, made the wool fleece intolerable, an uncontrollable motor restlessness rendered the rest plan impossible and the hypnotic had not only failed as an hypnotic, but had been followed by a collapse depression which was almost alarming. Electricity and massage had both apparently aggravated the neuritic pain. I changed tactics at once, abandoned the wool fleece, discontinued the electricity and both prescriptions, ordered champagne every two hours, and a prescription containing caffeine gr. ½, strychnine sulph. gr. 1/25, quin. sulph. gr. 1.½ in capsules, one every three hours, modified rest, forced feeding to be pushed more actively, and the massage continued. The effect was almost magical. The patient began almost immediately to improve and within a day or two, was sleeping well, eating well and practically free from all pain. Although still annoyed by various hyperesthesia as well as hyperalgesiæ in the area of the affected intercostal, he has since made a complete recovery. Unless employed at the very beginning, local measures such as blisters, poultices, ice, thermocautery, leeches, menthol and other sprays and anodyne salves and ointments are worse than useless. Promptly employed, some of them sometimes may arrest further progress, practically aborting the attack. If not effective within forty-eight hours, further continuance is at least negatively harmful.

I have never found any advantage from applications of galvanism through the bare metal electrode recommended by some authors. Indeed, this method is much more often positively harmful. Strapping the chest is at times beneficial, but not often necessary, and always very uncomfortable. The selection of the left rather than the right side is rather remarkable in these cases, and of some importance, especially in aged patients, in that in such cases it is quite imperative that angina pectoris in any form shall be excluded. Simulated mastodynia in women is often, if not always, a variety of intercostal neuralgia or neuritis. Pleurodynia is usually easily differentiated.

Neuritis of the Fifth Nerve, Trigeminal Neuritis, Tic douloureux.—Patient No. 4 is the victim of one of the most virulent and at times intractable forms of neuritis, known as tic douloureux. Painful spasmodic disease of the trigeminus is a competent definition. Although taxing your resources at times to the utmost, it is at the same time often a most fascinating prognostic and therapeutic problem. The etiology is exceedingly varied; sometimes it is due to trauma, again to cold, sometimes to infection as from erysipelas, aural disease or abscess. In other cases the cause is constitutional and the disease becomes one of the numerous nervous manifestations of the uric acid diathesis, of malaria, of gout or of diabetes; exogenous intoxication as from lead, alcohol, opium and arsenic may be the causative factor in special cases. Arterial degenerative disease such as atheroma or fibrosis with associated nutritional disturbances is a very common cause explaining the extraordinary frequency with which the disease occurs in the aged. Why females should preponderate numerically is not so easy of explanation, though none the less a fact. Perhaps the factor of broad diminished neurological resistance is a sufficient explanation. I find in examining my records that excluding traumatic cases, the females as compared with males are as three to one. I find also from the same records that 60 per cent. of my patients were past the age of fifty years. Quite often in these patients there is disease of the kidneys with resultant insufficient sewerage and non-elimination of toxins, and it is sometimes difficult to determine the exact etiological and allied therapeutic significance of the urinary findings. The urine should always and frequently be examined in all cases of tic douloureux, especially in the aged, and the findings should to some degree, at least, influence the treatment and prognosis. Blood analyses, especially for infectious or parasitic invasion should constitute a part of the routine study of these cases. Local conditions, such as carious teeth, alveolar disease, disease of the antrum, exostoses, malignant growths, suppurative disease of the ear or of the frontal sinus, of the nasal cavities or of the orbit are occasionally found to be causatively related directly or indirectly to this affection. Just here let me refer with emphasis to a fact of great importance in its bearing upon both prognosis and treatment in this and other sensory neuroses, and indeed in all the neuroses, motor and trophic, as well as sensory. Incidentally I might add that to an even greater degree in importance as a fact does it apply to the psychoses: *nerve function especially when perverted is peculiarly prone to habit tendencies. Starting in some local, definite cause or in some equally positive constitutional state, a neurosis, motor, sensory or visceral, motor, quickly develops a habit tendency which results in a continuation of the neurosis after the cause shall have ceased to act or shall have been removed surgically or otherwise.* Examples are both numerous and familiar in every day general experience. A fifth nerve neuralgia may begin from a carious tooth. Let the tooth remain for a few days, then extract it; the neuralgia should disappear at once upon the removal of the cause. Sometimes it does; quite as often it does not. The result, the effect, has to be treated as an entity, independently of the cause. Epilepsy, especially the traumatic variety, affords another example in point. Let a given epilepsy be due to direct local irritation at a certain circumscribed point by a definite lesion such as tumor, spicule of bone or clot. Let such local cause remain for a few weeks or months, then remove it with the

utmost nicety of surgical skill and precision. The positive cause having been removed, the resultant effect—epileptic attacks—should cease, but do they? In my experience, a large one, the epileptic attacks continue as often and as severely as before in a large majority of cases, and quite often the original condition is intensified. The same reasoning and experience and facts apply with equal importance to the tics. I have seen spasmodic torticollis originating in a local condition continue after such causative condition had been removed by a tardy operation. In reflex choreas excited or aggravated by local states such as adherent prepuce, nasal disease, etc. I have found it invariably necessary to treat the neuroses specifically after the exciting cause had been removed. In my experience there is no exception to this vicious habit tendency in all the neuroses. It is this fact which to my mind sufficiently explains the limitations of surgery in neurology as a means to the end of cure.[4] Remove the spicule of bone or the tumor or the clot in epilepsy, have the carious tooth extracted in neuralgia, circumcise in phimosis, free the adherent clitoris, remove adenoids, operate for nasal stenosis, correct the astigmatism or the eso- or exophoria in chorea or migraine but do not promise a cure from such procedure, and do not neglect the routine treatment which would apply in the idiopathic (so-called) cases. You will lessen the reproaches of conscience, and more important still, the reproaches of clients. In the treatment of tic douloureux the recognition of this habit tendency has a twofold therapeutic value and significance. First that already indicated in the preceding paragraph which bears particularly upon this affection because of the frequency with which the surgeon in this disease enters the domain of neurology. Nerve stretching, nerve section, or the more extreme and radical operation of Hartley or Krause is quite common. From personal experience, as well as a careful, conservative study of statistics, I desire to go on record as protesting most energetically against such procedures, one and all, except in most carefully selected cases, and always as a last resort, all other methods and measures having been faithfully tried and the worst results from operation being discounted by a worse condition beforehand. Be sure first that your patient has had the benefit of a trial of every other method and specific, empirical or otherwise, and sure that his condition cannot be made worse, no matter what the outcome. In all cases promise no more than this. You will find yourselves wise and fortunate in a direct ratio to your observance of this advice. Surgery to be effective, must be prompt and must anticipate habit tendency. Extirpation of the Gasserian ganglion does cure the pain, but at what risk and at what cost? There are many plans of treatment in this affection, any one of which may succeed in individual cases. A careful study of the personal equation as indicated in heredity, environment, temperament, physical habits, etc., may be and usually is decidedly helpful in determining the special plan you will follow in a particular case. Some patients bear anodynes badly, others are intolerant of stimulants. Assuming that you have eliminated local causes, constitutional states and reflex irritations, or that you have properly discounted them by treatment or otherwise, and your patient is still unrelieved, several more or less empirical plans remain. First as to the castor oil plan. I do not know how it proves effective, and your explanation is as good as mine, so we will not exchange theories. Daily doses of an ounce or two have occasionally been followed by relief. So far as I know no special indications exist which afford a guide as to the appropriateness for this method. If all other more legitimate methods fail, it should be tried. Dana's treatment with rapidly progressive and massive doses of strychnine I have found in a few cases marvelously happy in results. It should always be given a trial. The patient should be put to bed on a full nutritious diet with milk-cream mixtures as a special and forced feature. The strychnine should be given first—preferably hypodermically—in doses of $^1/_{40}$ gr. every four hours, the second day $^1/_{30}$ every four hours, the third day $^1/_{20}$, the fourth day $^1/_{16}$, the fifth day $^1/_{12}$. If no result is obtained by the end of the fifth day, it is useless and sometimes dangerous to pursue this plan further. I recall two cases, one referred to me by Dr. T. Kelley, treated at the Polyclinic Hospital, the other referred to me by Dr. Charlton Wallace, both promptly cured by this plan when everything else had failed. In both of these cases I was consulted, if I remember correctly, as to the method of operation and the selection of the operator, hope of relief from any other method having been abandoned.

There are other measures which may be tried of less constant or probable value, including aconite, gelsemium, colchicum, potassium, iodide and other drugs. I shall not burden you with presumably familiar details. My own plan, for which I claim some originality in conception, is as follows: Assuming all local and constitutional predisposing and exciting causes to have been properly antagonized and all clearly indicated etiological plans of treatment in individual cases to have been tried and found wanting, I adopt the following more or less specific course: First as to electricity. I always use galvanism and the continuous current introduced and withdrawn through the rheostat and guided as to quantity by the meter. One electrode, it makes no difference which, is applied back of the neck, the other (pliable, flexible) over the face affected. Both are bare Erb electrodes covered with wet towels thickly folded. Both electrodes should be as large as possible, diffusion of current at the contact surface being desirable. Irritating shock from interruptions or excessive currents should be avoided always and in all forms of painful neuritis. Two or 3 milliampères very gradually increased to 4, 5, or 6 for five minutes, the séances gradually lengthened to twenty or thirty

minutes, will be found to be safest and most effective. Mild currents with long seances is a safe general rule. Following this treatment the face is massaged gently with lanolin, and in several painful cases I have advised a face mask or hood to be worn day and night, lined with lambs wool fleece. With a full faith in my belief as to the importance of neurotic and neuritic habit tendencies, I apply this faith in works along the lines of the following theory and plan: Facial painful tic is primarily a disease of the fifth nerve. Very soon a sympathetic or associated implication of the seventh is induced through which the motor tic is added. The seventh forms the habit of ticking, so to speak, and this in turn keeps up the painful irritability of the fifth, a vicious cycle being the result, cause becoming effect and vice versa. Removal of the original cause of the painful neuritis of the fifth which started the motor tic of the seventh not being sufficient to break up the tic habit, I begin on the motor habit. I put the patient upon full doses of hyoscine hydrobromate, gr. $^1/_{100}$ to gr. $^1/_{50}$ twice or three times daily. I stop the tic by this means, and eliminate the continued source of irritation of the sensory fifth nerve. After controlling the tic, I attack the painful neurosis with one of the following combinations. Rx. sodii salicyl. gr. III, quin. sulph. gr. I to II, codeine gr. ¼ to I,—one such every three, four or five hours, or Rx. sodii salicyl. gr. III, heroin gr. $^1/_{10}$ or heroin alone, gr. $^1/_{25}$ to $^1/_{10}$ or codeine alone gr. ¼ to gr. I, or even two grains. The anodyne is reduced rapidly within a few days, and I then put the patient upon an active constructive tonic, always containing strychnine. I have tried various mechanical measures to control the tic, strapping the face with adhesive strips, painting it thickly with collodion, etc., in the effort to secure immobility, but with only occasional success. All such measures are inferior to the hyoscine. Gelsemium, colchicum and other similar drugs of ancient vogue act, when they act at all, through the same principle, in my belief, rather than specifically, and all are inferior, in my experience, to hyoscine. I have the records of four cases of tic douloureux in which this plan proved successful, almost every other method having failed to even alleviate. I have withheld details as they would needlessly lengthen this paper and additionally for the reason that they constitute the basis for a separate paper in preparation upon this special subject. Let me say in conclusion that it is in no one measure but by the careful observance of all details that the best results are obtained in the treatment of this affection.

Traumatic Neuritis.—A. B., aged forty-four years, American, merchant, of negative family and personal history. On February 16 last, in attempting to board a rapidly moving car he was jerked violently from his feet, still retaining his right hand grip upon the guard rail. Regaining his footing he jumped on the car, and in a violent rebound struck his right shoulder forcibly and viciously against the iron upright of the gate. He felt a severe local pain and tenderness immediately over the deltoid area, but not until two days later, the symptoms persisting, did he seek medical advice. Unfortunately either a superficial examination or a deficient knowledge led to the opinion that the entire trouble consisted of a muscular strain, with the correlated advice to use counter-irritant liniments, etc. Two weeks later his suffering and disability having steadily increased, he was referred to me. All discoloration and swelling had disappeared. Pain and tenderness on pressure over the acromion process and just over the joint anteriorly existed. The pain extended down the arm in a line along the outer surface, chiefly in the distribution of the circumflex to the elbow and below in the area of the ulnar. No pain below the wrist, but numerous paresthesiæ, particularly tingling and formication in the little and next finger. The response to the electric current was of the irritative character, but the polar formula was normal, no reaction of degeneration being present. There was considerable limitation of motion from pain and some actual diminution of power in the deltoid elevators and in both flexors and extensors of upper and forearm in resisting forced movements, with slightly diminished hand-grasp and slight beginning atrophy. The patient insisted upon attending to business daily, but agreed to wear the arm in a sling—my object being to thereby keep him constantly reminded not to use it. A lining of lamb's wool fleece was basted to the sleeve from the shoulder to wrist and daily massage inunctions of lanolin were ordered. A prescription each dose of which contained codeine gr. ¼, sodii salicyl. gr. III, quin. sulph. gr. I, was directed to be taken every four hours. Daily treatments with galvanism, one electrode 2 by 4 heavily protected back of the neck, the extended hand resting comfortably on the other (same size) was instituted. For the first three or four treatments a current of 3 or 4 milliampères carefully introduced through the rheostat was employed, the séances lasting some twenty minutes. Gradually, as the pain diminished, the current was increased to four, five and finally to ten milliampères. This patient was tardily responsive and seven weeks was required to effect a cure. Even now, as is often the case in neuritis, by the way, he is quite disagreeably reminded of past experiences after any unusual or depressing exertion or fatigue or by certain humid barometric and atmospheric conditions. In many cases for years afterward the victims of neuritis, toxic or traumatic, can foretell a storm with quite as much uncomfortable accuracy as the chronic rheumatic, and overexertion or fatigue from any cause brings a reminder in a sciatic ache or a brachial tire.

One aspect of this last subject demands special consideration because of its medicolegal bearing and importance. Traumatic neuritis the result of street-car and other accidents is an exceedingly common allegation in bills of particu-

lars in suits for damages. It is next, perhaps, in frequency to so-called railway spine. A large proportion of these cases are fraudulent, of course, but by no means all. It is quite as important in the interests of justice and humanity to protect the honest litigant as to expose the fraudulent malingerer. There are several quite nice points of diagnosis with which you should be familiar. In the first place the very important fact should not be overlooked that subjective symptoms are relatively valueless especially if unsupported by objective signs before judge and jury, while objective or demonstrable symptoms are positively convincing in medicolegal practice. Pain, weakness, paresthesia, anesthesia and analgesia are all subjective and may be simulated by the malingerer in extreme degree, and while of significance to the neurologist, are of but little weight to the layman in the jury box. Atrophy, especially if marked, altered deep reflexes, trophic changes in the skin, hair, nails, etc., and altered electrical reactions are objective and indisputable symptoms both in character and significance. Atrophy is to the trained expert much more certainly determined by the sense of touch than by vision.[5] The harpoon test with histological examination of the muscle tissue is advisable in doubtful and important cases. Alteration of the normal polar formula of Erb in the electrical response to galvanism is positive evidence of nerve degeneration, and therefore of organic damage.[6] Quantitative alterations to the faradic current are less positively significant alone, especially as to permanent injury. On the issue of electrical reactions alone I once won for a patient in a suit for damages in a case of traumatic neuritis. Sensory symptoms, no matter how extreme in degree, are always suspicious if unassociated with demonstrable motor trophic or electrical changes. In a recent medicolegal experience a litigant who was a malingerer of most aggravated autosuggestive type, claiming total loss of temperature sense, allowed a match to burn to total consumption resting on his bare skin without a quiver of muscle or the slightest sign of painful perception in anyway, the fact of malingerer plus self-hypnotism being easily demonstrable by a dozen tests which were successfully employed. True muscular atrophy, altered deep reflexes, properly tested, trophic disturbances and altered electrical reactions cannot be simulated, and are, therefore, of the utmost positive value in medicolegal cases.

Finally, and as a therapeutic summary, let me emphasize certain facts which will have been noted already perhaps by those who have read between the lines. First the importance of functional rest in all cases of neuritis often to the extent of mechanical enforcement; second, the value of forced nutrition, especially with fats, both constitutionally and locally, cream, butter and lanolin by inunction being always indicated; third, my great confidence in electricity and massage, neither of which, however, should be used empirically, both of which require in individual cases the utmost nicety of personal adjustment; fourth, the maintenance of an equable surface temperature in all forms of sensory neuritis, best attained by the use of lamb's wool fleece; fifth, the recognition of neurotic habit tendencies and predispositions which vary widely but should always be observed and never overlooked or disregarded and met with corrective nerve discipline, the method varying perhaps with each patient; sixth, recognition of the fact almost axiomatically true that all cases of neuritis except perhaps the traumatic and mechanical are associated with and often dependent upon states of altered metabolism and perverted nutrition to which recognition is logically correlated the necessity of tonic alterative and nutritional measures.

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CLINICAL EXPERIENCES WITH THE ENLARGED PHARYNGEAL TONSIL.*

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The first publication on adenoid vegetations by Wilhelm Meyer contained so complete a description and such rational ideas concerning treatment that subsequent observers have added but minor details to the subject. I, too, can only bring before you clinical fragments which may serve to fill out some gaps in our knowledge of the enlarged pharyngeal tonsil. I shall base my remarks on personal experiences with reference mainly to questions not fully settled, or still under controversy. A repetition of commonly accepted facts would be out of place.

Referring in the first place to the diagnosis of adenoid vegetations, allow me to discuss the significance of the facial appearance. The half open mouth, the thick upper lip, the thin and pinched nostrils and the sleepy look of the lower eyelids give the afflicted children a striking facial expression which Lange has aptly termed the adenoid habitus. As Meyer has pointed out this typical face has been reproduced by some sculptors of antiquity as well as in the painted portraits of historic subjects of the middle ages. While this stamp of face is highly suggestive of hypertrophy of the pharyngeal tonsil, yet it may in rare instances be due to other lesions. I can recall some 15 children in whom my presumptive diagnosis was not borne out by further examination. They were instances of chronic suppuration in comparatively narrow nasal passages with either a

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normal, or, at any rate, a not much enlarged pharyngeal tonsil. In young children it is of course almost impossible to learn the exact site of the suppurative lesion. From the profusion of the discharge I inferred that it was due to a diffuse process. I have learned, however, that if there is any hypertrophy of the pharyngeal tonsil, however slight, accompanying this condition, its removal is essential for a cure. But the expectation of a striking improvement following the operation is not realized in such instances. Its benefits follow very gradually in connection with other treatment. Sometimes, too, though rarely, a septum deformity with enough diffuse hypertrophy to occlude both sides may simulate the adenoid habitus. But it is never produced by a one-sided obstruction.

On the other hand, the adenoid habitus is not seen in some children whose pharyngeal tonsil is sufficiently enlarged to be of decided clinical importance. It is true, however, these are but moderate enlargements producing disturbances rather by their state of inflammation than by their actual size.

It is but in a small proportion of instances that the obstruction to nasal respiration is directly due to the blockage of the post-nasal space by the hypertrophy. Such children can scarcely ever breathe through the nose and are not able to blow the nose. Most patients, however, breathe quite easily during daytime, at least, while being examined. Their real trouble begins only when they lie down, or during an acute "cold." Meyer suggested that the vegetations might vary in vascularity at different times. This is somewhat true, at least, in the case of the softer growths. The extirpated specimen is sometimes paler and apparently smaller than it appeared in the mirror during life. But repeated microscopical examinations did not show me a sufficient vascularity to account for any important variation in size according to the congestion of the vessels. I was hence led to attribute the greater obstruction during sleep to turgescence of the posterior ends of the turbinals—at least, the inferior; perhaps, too, the middle. This explains the fact that even after the most satisfactory operations it may take a few days before nasal respiration becomes normal, for the wound still keeps up the reflex turgescence. As you know, it does sometimes take weeks before the full benefit is realized. This view has also been supported by rhinoscopic observations on young soldiers by Barth, who found enlargement of the posterior ends of the turbinals more numerous in proportion to the size of the enlarged pharyngeal tonsil. In a small number of children I have been able to see the distended turbinals filling the posterior choanæ.

The variable degree and duration of turbinal turgescence explains likewise why the characteristic adenoid "dead" voice is not equally pronounced in all patients. It is invariably present in all large hypertrophies, but when the tonsil is not very large relative to the size of the upper pharynx the absence of resonance depends on the amount of occlusion of the choanæ by the swollen turbinals. Hence, a person without adenoid enlargement may temporarily speak in a typical manner during a severe coryza. Incidentally I may remind the audience how well Dickens has portrayed the adenoid voice in his character Barney in Oliver Twist.

The inattention or want of mental concentration of adenoid children which Guye has termed "aprosexia" seems to depend entirely on the size of the hypertrophy, and not on the obstruction by vascular distention. I have not met with it in over 15 per cent. of my cases, and these were all instances of large tonsils. It is, however, by no means present in all children with large adenoids, and its mode of occurrence is hence not clear.

Unless one has personally watched children with pronounced obstruction during sleep, it is difficult to realize how much disturbance this lesion engenders. The restlessness and tossing of these little patients is sometimes pitiable in the extreme. Frightening dreams, night-terror and nightmare are more common than is ordinarily stated. I have known two instances of asthma in children to cease after removal of adenoids, but I was not able to observe either one long enough to speak of a permanent cure. I can record, however, the relative frequency of cough as a reflex symptom in instances in which no bronchitis was present, basing the statement, of course, on the prompt disappearance of the cough after operation. In most instances, however, the cough present is really due to a subacute bronchitis secondary to the pharyngeal lesion. My experience agrees also with that of Groenbeck regarding the frequent coincidence of enuresis with adenoids. In rare instances the habit ceases promptly after operation; oftener, however, it disappears very gradually. Again, in a few cases the incontinence did not seem to be benefited by the removal of the tonsil.

It does not seem to me to have been sufficiently emphasized that the most mischief started by adenoids results from attacks of inflammation so frequently occurring in the tonsil when enlarged. These inflammatory spells, often but subacute from the start, extend to the nasal passages, to the ears, and not rarely descend into the bronchi. The enlarged pharyngeal tonsil is not necessarily or continuously inflamed. Like large faucial tonsils, it may be fairly pale, though never as pale as a non-inflamed faucial tonsil. During such periods there are no symptoms except those due to the size of the hypertrophy. Moreover, there is no purulent secretion during this quiescent period. That it is not merely the presence of the pharyngeal hypertrophy, but that it is the inflammatory attack starting there, which accounts for the involvement of the bronchial tubes and of the ears can readily be learned from carefully taken clinical histories in suitable cases. From observant parents we can learn that the bronchitis or the acute ear disease is the sequel of a "cold" first noticed in the nose or throat. While this in-

flammatory origin is quite evident in the case of a primary or a recurrent purulent otitis, it is commonly believed that the ordinary form of impaired hearing resulting from adenoids—the so-called Eustachian catarrh—is produced by pressure against the Eustachian orifices. This view is not borne out by my experience. In the rhinoscopic view, whenever feasible, the lymphoid growth is usually found quite distant from the Eustachian region. Hearing is not necessarily impaired by adenoids, even when quite large. The Eustachian obstruction may begin any time after the growth has long been known to exist, and in favorable instances the ear symptoms sometimes disappear spontaneously when the inclement season is over. Occasionally one can get the definite history of an inflammatory attack in the nose preceding the impaired hearing. As a rule, however, this form of ear involvement begins so insidiously that the history is not decisive. As we all know, the prognosis for the hearing is on the whole quite favorable in simple Eustachian catarrh. It has seemed to me, indeed, as if the danger to the ears had been somewhat overstated in literature. Yet I am not unmindful of the fact that in relatively rare instances Eustachian obstruction resulting from adenoids may lead to mucous exudation and ultimately to proliferative changes in the middle ear. We must also take into account that adenoids are found in a large majority of deaf-mutes, and that in those subjects their presence is often an important factor in the etiology of the graver and irreparable lesions.

The relation of adenoids to eye affections has not received quite the attention it deserves. Of children suffering from phlyctenular keratitis a large majority have a hypertrophied pharyngeal tonsil, although extremely large growths are rather exceptional. Within the last two years I have followed the practice of removing the adenoids in all such instances, even when they had caused no disturbance beyond slight impairment of nasal permeability. While the erratic course of phlyctenular keratitis does not permit dogmatic statements, I must still insist that my impressions regarding this treatment have been very favorable. In cases which had previously been properly treated by others, but without attention to the adenoids the operation has so often changed promptly the course of the eye disease, as to leave little doubt regarding the pernicious influence of the pharyngeal lesion.

Any observer with moderate experience cannot fail to notice the striking influence of adenoids upon the general nutrition in some instances. The majority of our juvenile patients, it is true, enjoy good general health and suffer only from local symptoms. But in about 20 per cent. the weight and even the growth are below par, the children are frail and anemic. All this malnutrition is, as a rule, corrected, and often to a striking extent, by operation. This influence on nutrition does not depend on the size of the growth. Quite often a relatively small tonsil has escaped detection on account of but slight obstructive symptoms, and yet the child will pick up wonderfully after its removal. I have many records of a gain in weight of 10 to 20 per cent. within half a year following the operation. The interfered breathing and disturbed rest can scarcely account for this effect upon nutrition, as the latter is not proportionate to the former. It seems rather as if some adenoids exerted a poisonous influence upon the system. I need but remind you of the researches of Lichtwitz and Sabrazès, who found an inversion of the percentage formula of white blood-corpuscles together with a high anemia the common rule in adenoid children. Personally, I have also found anemia improving rapidly after operation.

As children advance in age the proportion of immediate and complete results following a satisfactory operation is somewhat lessened as compared with younger subjects. I attribute this to hyperplastic lesions in the upper air passages often induced by adenoids in the course of time. This influence is best observed in the faucial tonsils. Hypertrophy of the latter without adenoids is not common, while conversely moderate adenoids without abnormal faucial tonsils are much more often met with. Decisive of the relationship between the two is the frequent observation that after the adenoid operation the faucial tonsils lose their irritated appearance and shrink slightly in size. Hence, the indications for their removal disappear not rarely after the pharyngeal tonsil has been taken out. Similarly I have noticed that among children with septal hypertrophies there are but few without adenoids. As these septal irregularities, apart from pure deflections, are not common until long after puberty, the prevalence of adenoids cannot but signify an etiological relationship. I will refer, too, again to the statistics of Barth, showing the effect of unremoved adenoids in causing enlargement of the turbinal extremities.

The cause of the abnormal growth of the pharyngeal tonsil I can only find in repeated attacks of coryza in predisposed subjects. Whenever I have been able to observe personally, or to trace reliably the development of adenoids, it was always the same history. The baby's first disturbance was a severe "cold" in the nose, with obstruction and purulent discharge. The attack subsided but the interference with nasal breathing remained, and became intensified with every subsequent coryza. As far as I have been able to observe, the morbid growth begins in the first or second year of life, though often it does not reach an embarrassing degree until a few years later. If, however, no enlargement has occurred within the first three of four years I have all reasons to believe that there is no predisposition to lymphoid hypertrophy. I have known a few instances of acute inflammation of the pharyngeal tonsil in older children who had previously had normal nasal breathing. The tonsil was swollen to an extent simulating extreme adenoid hypertrophy. Yet it regained its normal size in the course of some weeks and left the nasopharynx

unobstructed. I have never met with congenital adenoid hypertrophy and greatly doubt its possibility. Regarding the nature of the predisposition to hypertrophy we have as yet no knowledge. To some extent it is hereditary. For it is quite patent that in some large families there are more instances than could be accounted for by accident, while in others it is conspicuously absent.

The predisposition to lymphoid enlargement is marked in instances of degeneracy. Various observers have noted that large adenoids are almost the rule in imbecile children which I can confirm in my limited experience. Among some 1,200 cases which I have operated there were about 15 to 20 children—over 1½ per cent.—who while not imbecile, were backward mentally to an extent beyond what could be considered "aprosexia." As far as I could learn they were little or not benefited mentally by the operation. This is a larger proportion than would be found in children without adenoids. Again the proportion of adenoids in deaf-mutes is strikingly larger than in normal children. While this lesion is in some instances a factor in the causation of the labyrinthine lesion through extension of disease of the middle ear, it is in the majority of deaf-mutes but an associate evidence of a degenerate tendency. It has also been stated that adenoids are the rule in children with cleft palate. Of six cases, however, which I have examined three only had enlargement of the pharyngeal tonsil.

An important and not fully solved problem is the relation of adenoids to scrofula, as in apparently scrofulous children adenoids are much more common than in others. If we use the term scrofula in its older clinical but rather vague sense, viz., referring to a poorly nourished, pale child with adenoid stamp of face and liability to purulent otitis, it coincides with the picture due directly to the enlarged tonsil. To a certain extent the appearance of scrofula is thus produced or at least simulated by the adenoid hypertrophy and ceases after its removal. But the trend of modern research suggests that true scrofula is more than this, that it is really the result of slight chronic poisoning of the system from some tubercular focus in lymph glands. As a rule, the enlarged pharyngeal tonsil cannot itself be accused of being this focus. For a large number of microscopical examinations by different observers have shown that about 95 per cent. of adenoids contain nothing suspicious of tuberculosis. It is only in some five per cent. of specimens that caseating tubercles are found. I have had 15 successive tonsils examined showing two times tuberculous infiltration, a proportion which is no doubt accidentally large in so small a series. It is striking that tuberculosis of the tonsil does not reveal itself either during life or on gross view of the extirpated growth. The concordant opinion of all who have followed their cases is that the tonsillar tuberculosis is rarely if ever primary. Lewin has shown, too, that in tuberculous cadavers tubercles are found about as often in the pharyngeal tonsil when of normal size as when enlarged. Hence we can consider actual tuberculosis of the pharyngeal gland only as an exceptional occurrence. It is, however, worth noting that adenoids are so often the cause of enlarged lymph glands on the back of the neck. That many of these glands are tubercular has been shown both by autopsies and by diagnostic tuberculin injections. Hence the suspicion is at least tenable that after all the enlarged pharyngeal gland may be the gate of invasion of the tubercle bacillus, even though the latter does not often cause local manifestations in the tonsil itself.

There can be but little dispute regarding the indication to remove every enlarged pharyngeal tonsil that causes disturbance by its enlargement or its periodic attacks of inflammation. Regarding the size of the normal tonsil we cannot accept the dictum of the anatomist, as his observations do not decide whether a given specimen is or is not strictly normal. On the basis of rhinoscopical examination I regard a tonsil as morbidly enlarged whenever it protrudes abruptly above the level of the surrounding mucous membranes, no matter how little. But a minor and stationary hypertrophy in a relatively spacious pharynx produces no symptoms and hence calls for no interference. Incidentally, I may remark that all the older illustrations of adenoids during life with exaggerated coxcomb and stalactite appearance are fanciful, for nothing like this is seen in completely extirpated specimens.

A trial of almost all instruments for the removal of adenoids has led me to decide definitely in favor of Schütz's guillotine-shaped pharyngotome as the best. I have modified it slightly in construction and especially in the shape of the handle, and can now report nearly five years' experience in about 250 operations. As now made it is very substantial and can be perfectly cleansed and sterilized by dipping it into boiling soda solution. The knife blade is apt to break when moved to and fro very many times in succession, but can be quickly replaced. A break during operation, which has occurred to me but once, led to no trouble beyond a second introduction. I consider its use the most thorough and quickest of all operative methods. A similar strong endorsement of the original Schütz instrument had previously been given by Hessler after trial in 100 operations. The ordinary pattern is applicable in all children above three to four years of age, while a smaller size can be used in younger subjects. It can slide round good-sized enlarged faucial tonsils and is only hindered by an unusual degree of their hypertrophy. With the head thrown back, the shoulders forward, the lower jaw well depressed, the guillotine pushed firmly upward and backward, the entire tonsil is bound to be cut off in one sweep. Unless swallowed, which is a rare accident, the specimen demonstrates the correctness of the diagnosis and the thoroughness of the operation. A slip, as sometimes happens with the Gottstein knife, is

almost impossible. As often as I have reinserted the instrument a second time, I have usually failed to bring away any more remnants, provided I pressed firmly enough in the first instance. Examination after healing shows occasionally a small fringe of adenoid tissue next to the upper rim of the choanæ. These remnants were of sufficient size to permit or demand a second operation but twice in over 200 instances. The hemorrhage is the same as with any other operative method, but it does not last as long. In my former experience with my older pattern of forceps or with the Gottstein knife a return and persistence of hemorrhage occurred in about one per cent. of cases. I have been able to trace such persistent bleeding to tags of partially detached tissue. As the adenotome makes a clean sweep, this danger is removed.

The quickness of the operation has made narcosis entirely unnecessary in my practice. I employ anesthesia only when the faucial tonsils are to be removed in the same sitting, or when the parents demand it. While we cannot anesthetize completely by means of cocaine, still, the local effect of cocaine aided by adrenalin reduces the discomfort to such an extent that I cannot but consider narcosis the harsher procedure for a child. The timely warning by Hinkel has shown the danger of chloroform in adenoid children to be so great that it should not be employed. As far as I can learn from literature and my small experience, ether is not more dangerous to these subjects than to average children, but on account of its more unpleasant action it has not been used as much as chloroform. For a simple adenoid operation nitrous oxide gas is undoubtedly the safest and least objectionable if an anesthetic is to be used. But I can only repeat that outside of multiple (faucial) tonsillotomy the adenotome enables the operator to do his work more quickly, with equal thoroughness and with no more harshness on the wide-awake child than under narcosis.

While operating with my former forceps I found it necessary to do a second operation after reexamination during the second week in nearly one-quarter of cases. With increasing practice this number diminished, but especially so by beginning with the Gottstein knife and following with my forceps if the removed specimen did not seem to include the whole tonsil. The adenotome, however, has but twice failed in reaching from the anterior to the posterior end of the growth. Undue stress it seems to me has been laid upon the extension of adenoids into Rosenmüller's fossæ. Ordinarily the base of the growth does not extend quite so far laterally, though soft vegetations sometimes spread out along the surface. In rare instances lymphoid tissue really fills the fossæ after the tonsil has been removed. This can only be taken away with a small curette, provided irritation of any kind indicates its removal. Large, wing-like masses of lymphoid tissue which in rare instances descend from the fossæ to below the level of the soft palate I have found to be infiltrated reduplications of mucous membrane independent of adenoids proper, as they occur sometimes without the latter.

For the removal of remnants of the tonsil left by an incomplete operation I have found the cold snare the most convenient instrument. I use a straight snare through the mouth with the wire loop bent upward. This manipulation causes so little pain that repeated insertions are always tolerated by manageable children.

Relapses of adenoid growth I have only seen after incomplete operation, as indicated by the history or the asymmetry of the growth. Their probability seems to depend on the amount of tissue left as well as on the youth of the patient and his susceptibility to inflammatory attacks.

THE SURGICAL TREATMENT OF DYSMENORRHEA.

BY WM. E. PARKE, M.D.,
OF PHILADELPHIA.

When asked to read a paper on the surgical treatment of dysmenorrhea, an aphorism of student days respecting diseases of the ear at once came to my mind, namely, diseases of the ear are divided into two classes, those that are cured by the use of the Politzer bag and those that are not. In a like manner I might suggest that dysmenorrheas may be divided into two classes, the one curable by dilatation and curettage, the other not.

The causes of dysmenorrhea having been set forth by my predecessor, I will only allude to the symptomatology to indicate the type for which operative measures promise relief.

The rôle which dilatation and curettage plays in the operative treatment of dysmenorrhea, you will perceive, is an important one, although operations of greater gravity are demanded when this symptom is secondary to certain pathological changes.

The symptom of true obstructive dysmenorrhea is *pain* which has the cramp-like character of labor pains. It may follow an operation, or examination may disclose the presence of a new growth. The operative treatment of this condition will consist, of course, in the removal of the cause. If it be a fibroid, remove it if feasible, amputating the cervix, if necessary, or do a hysterectomy. When obstruction is due to cancer the disease is usually so far advanced as to be incapable of complete removal, and we must be satisfied with scraping out the canal. If cicatricial contraction following operation be the cause, dilatation should be done, and curettage is in order, for the endometrium is always diseased under these circumstances.

The small anteflexed uteri are usually underdeveloped. Pain in this class of cases was formerly thought to arise from obstruction due to angulation of the canal. This is probably an error. Dilatation sometimes benefits these cases, but they are not promising ones for cure by this means.

Membranous Dysmenorrhea is attended by pain not unlike labor pains, which come on with the beginning of the menstrual period and continue with increasing severity until the membrane is expelled. It is in this particular an obstructive dysmenorrhea, and its surgical treatment should consist in a wide dilatation, curettage and application of pure carbolic acid to the endometrium. This expedient affords relief from the severe pain for a time and occasionally cures the disease.

Spasmodic Dysmenorrhea is characterized by pain which is cramp-like, and often of great severity, causing the victim to toss about, sweat, and sometimes vomit or even faint. It is paroxysmal and usually of short duration but rarely may be prolonged sufficiently to lose this distinctive sign. When severe, it is not localized to the uterus, but fills the whole pelvic zone, and may or may not come and go with the menstrual flow. Recumbent posture does not favorably affect the pain, and patients often express themselves as relieved by alcohol. A fairly large percentage of this class of patients are sterile. Physical examination of these cases, after some years of suffering will show a somewhat hypertrophied uterus.

The simple operation of dilatation and curettage finds its greatest field for usefulness in this type of cases. It is probable that the internal os in this condition is unusually sensitive and acts as a sphincter, and that forcible dilatation paralyses or lacerates some of the muscular fibers and thus relieves spasm, just as the dilatation of the sphincter ani muscle relieves spasm. The drainage canal is thus widened and secretion and especially clots are expelled with less muscular effort.

Congestive Dysmenorrhea is marked by pain of quite a different character from the preceding. Here it is more or less constant and precedes the flow by some days or a week. It may be simply an exaggeration of the aching that so commonly accompanies menstruation, or be severe enough to confine the patient to bed. It is worse at the beginning and improves toward the end of menstruation. It does not cause tossing about, fainting or vomiting, and is improved by the recumbent posture. The seat of pain is the pelvic area, but it is so often localized to the region of the left ovary, or both ovaries, as to give rise to the name of ovarian dysmenorrhea. Congestive dysmenorrheas are often dependent on pathological changes in the uterus itself, or its appendages, such as chronic metritis or endometritis, retroflexion, fibroid tumors and inflammation, or prolapse, of the ovaries and tubes. Congestive dysmenorrheas pure and simple do not require surgical treatment for their cure; but when they are secondary to the conditions above mentioned, some operative measure affords the only substantial relief in our hands. Thus a retroflexed uterus should be not only dilated and curetted, but the organ should be restored to the normal position by an appropriate operation such as shortening the round ligaments or hysterorrhaphy. When diseased appendages are the cause of the pain, its cure may depend on their removal. If fibroid tumors are present, their removal is to be advised, although dilatation and curettage will sometimes greatly ameliorate the condition, and should be tried where consent for the greater operation cannot be obtained.

The text-books mention other varieties of dysmenorrhea, for instance, neuralgic dysmenorrhea and rheumatic and gouty dysmenorrhea, which I mention only to remark that they do not come within the sphere of operative treatment and hence not within the scope of this paper.

The above-mentioned kinds of dysmenorrhea, I need scarcely say, are not always found conforming to a single type, but are sometimes blended, the symptoms of one class predominating over those of the others. Thus we may have a dysmenorrhea partly congestive and partly neuralgic—or spasmodic and congestive, and so are led not to give too rosy a prognosis in many instances after dilatation and curettage, for it is not a universal cure.

There is a dysmenorrhea or a condition associated with dysmenorrhea, which I think of sufficient importance to merit a special paragraph. I refer to ectopic pregnancy. A characteristic history is as follows: The patient misses one or more periods and may suffer from slight pelvic pain. Suddenly she is seized with severe pelvic pain and metrorrhagia with perhaps the discharge of membranes. This sometimes continues for days or even weeks, if the patient survives. She thinks it is simply irregular menstruation or perhaps a miscarriage; and not rarely the true nature of the case is overlooked by the physician who does not make the necessary examination. The operative treatment consists in the removal of that appendage which is the seat of the pregnancy.

Before describing the technic of the operation of dilatation and curettage, I consider it important to point out the contra-indications to this simple procedure. One should never dilate and curette a uterus whose appendages are known to be diseased, unless at the same time an appropriate operation is done upon the appendages; that is, when a physicial examination shows the presence of masses on either side of the uterus or adhesions of that organ, or of the tubes and ovaries.

Technic.—The operation should be conducted with the same antiseptic care as operations on other parts of the body. It is, therefore, necessary to anesthetize the patient; to wash the vulva and vagina carefully with soap and water, and to follow this with a bichloride or other antiseptic solution.

After introducing a speculum to retract the perineum, seize the anterior lip of the cervix with a volsella forceps, to draw down the organ and hold it firmly, while the smaller sized Goodell or Walthen dilators are introduced into the uterine canal (using previously, if necessary, a uterine sound to find the direction of the canal).

Stretch the canal sufficiently to introduce the larger sized dilator. Continue with this instrument to stretch the canal, either rapidly and in all directions or more slowly in one direction (Goodell's method) until, in a nulliparous woman, the blades are three-quarters of an inch apart, or in a parous woman they are as much as an inch or an inch and a quarter apart. The dilated canal will now admit a curette without undue force. This should be a sharp one (I know of no use for a dull curette). It should be grasped firmly by the thumb and fingers so that the amount of force used can be delicately determined. The whole endometrium is to be carefully scraped until the contact of the instrument with the more substantial underlying muscular structure becomes audible and communicates a distinct thrill to the operator's hand. That part of the endometrium which lines the uppermost part of the cavity is best reached by the curette forceps, an instrument which is a combination of the Gross stone forceps and the postnasal curette forceps. Following this the débris is to be washed out with sterile water through a two-way catheter, or wiped out with dry gauze

While I have alluded to this as a simple operation, I do not want to leave the impression that it is wholly unattended with danger. For in the hands of the most experienced surgeons, perforation by the dilators or curette has repeatedly occurred; and in the hands of less experienced operators serious damage to other abdominal viscera has been recorded.

It is, therefore, not to be undertaken without a physical examination to determine the absence of contra-indications, and should be done with the greatest attention to antiseptic details, and with judgment and care to avoid accidents.

THE DANGERS OF INFLATING THE STOMACH WITH CO_2 GAS; ITS DIAGNOSTIC VALUE. REPORT OF THREE CASES WITH AUTOPSIES.

BY MOSES BEHREND, A.M., M.D.,
OF PHILADELPHIA.

It is a remarkable fact that in a vast amount of literature reviewed not one case has been reported in which death can be directly ascribed to the use of carbon dioxide gas in inflating the stomach. The test has been used extensively in the last decade by many observers. Von Ziemssen and Mankopf have been strong advocates of this method; Mankopf and von Frerich being the first to use it. They advise it because of the sudden distention of the stomach which this gas causes, whereby the contour is easily outlined and the various displacements and morbid processes are thus more readily diagnosed. This is undoubtedly true, but the dangers following this explosion must be attributed to the sudden evolution of gas over which we have no control.

Referring to the CO_2 method of inflating the stomach Ewald says: "These methods suffer from the disadvantages that we have no control over the amount of gas produced after the salts have been introduced into the stomach or intestines, that disagreeable accompanying symptoms frequently arise from the irritation of the CO_2 gas upon the walls of the stomach or intestines and that, even though varying quantities of gas are needed for different persons, the degree of tension produced cannot be regulated at will or increased at a given moment."

Ewald again, in quoting Oser, Meinert and Riegel, states that these men have not noted any unfavorable results from this method. Schütz believes that a better examination can be made with CO_2 gas than with the inflation of air, on account of the sudden distention produced by the former procedure. Opposed to him are Runeberg and Oser, who inflate the stomach with air by the passage of the stomach tube. They believe that in this way the degree of the distention of the stomach can be well regulated. No one will doubt this, but this method is not without its dangers and disadvantages. The passage of the stomach tube is the main objection, especially with private patients.

The use of CO_2 gas in office practice for diagnostic purposes was recently mentioned by Elsner. Steele uses both to a considerable extent at the University Hospital. The practice of using these methods in the office and dispensary should be condemned.

The disastrous results obtained from the use of CO_2 gas for diagnostic purposes has led the writer to report the cases under his observation while interne at the Philadelphia Hospital. The method under discussion is certainly of diagnostic value as in all the cases the situation of the disease was located before death.

A diagnosis being difficult in the three cases led to the employment of CO_2 gas. The usual technic was followed. About one dram each of tartaric acid and sodium bicarbonate was dissolved in half a glass of water. The sodium bicarbonate was given first, followed immediately by the tartaric acid solution. Almost instantly a swelling was noticed in the epigastric region in one case. In all three there was a sense of oppression followed by depression and a condition resembling shock.

In the case just mentioned hemorrhage resulted, causing death of the patient twenty hours after its use.

Case I.—M. P., aged sixty-eight years; admitted to hospital May 2, 1901. She was sent from the out ward with a history that she had been in bed at intervals for several weeks and that she vomits after taking food. The chief complaint on admission to the hospital was weakness and inability to keep anything on her stomach. Her family history was unimportant. She had malaria, yellow fever and rheumatism. Menstruated at thirteen years. Always regular. Menopause not known. The present trouble extends over a period of twelve months. At the time I saw the patient she had symptoms referable to the stomach. She was well nourished but pallid. Marked

cardiac arrhythmia was also present; this was absent on admission to the hospital one year later. Now she vomits immediately after eating, appetite gone, marked eructations of gas, bowels variable, headache, vertigo, palpitation, some dyspnea, and pain across the epigastric region.

Physical Examination.—Patient is a very much emaciated woman; skin universally wrinkled; chest capacious, costal angle obtuse; breasts atrophied, though pendulous; abdomen scaphoid. Heart sounds are weak, though rhythmical. Lungs are emphysematous. Liver and spleen apparently normal in outline. Tenderness in epigastric region. No mass can be felt.

May 7, 1901. She is getting gradually worse, vomiting everything eaten. No blood is noticed. Drugs do not relieve her at all.

May 12, 1901. No diagnosis having been made, it was decided, after consulting my chief, Dr. W. E. Hughes, to use the CO_2 gas to inflate the stomach. Immediately after its use the patient was greatly distressed, tossing her head from side to side and making special efforts to throw off the gas. About half an hour afterward she vomited a quart of blood and at irregular intervals during the course of twelve hours large quantities of blood were ejected. Patient lived twenty hours after taking the seidlitz powder. At the time of her death she was exsanguinated.

AUTOPSY BY DR. FLEXNER.

Pathological Diagnosis.—Ulcer of stomach, hemorrhage, general anemia, adhesive pericarditis, chronic nephritis, small, granular kidney, atrophic cirrhosis, cholelithiasis, nephrolithiasis, acute peritonitis, cyst of ovary (left). That part of the autopsy relevant to the stomach condition will be described. Loops of intestine are distended, dark in color, tissues of lesser omentum are infiltrated with small recent hemorrhages. Stomach. Old adhesions on left side between fundus and spleen and between spleen and diaphragm. Stomach is not dilated, greater curvature shows a series of fine linear ulcerations. These are arranged in a radial manner about the esophageal orifice and average 4 cm. below the orifice. They extend into the submucous coat. They vary in length from 3 to 4 cm.; and in width from 4 to 6 cm. Their edges are elongated and slightly puckered. In the middle of base of one a small mass of necrotic tissue is seen. In addition to these there occur on the anterior surface of stomach about the middle of the lesser curvature, but near the esophageal end, a recent ulcer on which a recent clot sits. This ulcer, as far as can be made out, is triangular in form, measuring at its base 4½ cm. Its edges resemble those already described. At the apex of this triangle it is surrounded by two semicircular lines of ulceration; the larger one at the right extremity connected with an anastomosing ulcer also linear in form which is placed a little nearer the pyloric extremity. The serous coat corresponding to the necrotic focus is covered with fibrin. On moving this clot the interior of the stomach is reached. Necrotic serosa only separates it from the lesser cavity of the peritoneum. The ulcer is 4 cm. from the esophageal and 11 cm. from the pyloric extremity. The remainder of mucous membrane, especially about pylorus, is mammillated.

The immediate result, as shown by the post-mortem record, was the rupture of a blood-vessel at the base of an ulcer from which fatal hemorrhage ensued. The fact that this happened in the first patient on whom the CO_2 test was tried was an unfortunate circumstance, but believing it to be an unavoidable accident it was determined to give the test a fair trial.

It was hardly expected that in a patient almost seventy years of age an ulcer should be found. The vomiting occurring immediately after eating should probably have pointed to an ulcer of the stomach but in another case in which the same symptom was present a different condition was found.

Case II.—G. S., male, aged seventy-three years; was admitted to hospital June 21, 1901. His chief complaint was vomiting after eating. His family history was negative.

Previous History.—He had the usual diseases of childhood. Typhoid fever three years ago. No venereal disease. Always been a user of beer.

Present History.—Eight years ago trouble began with vomiting immediately after eating. This has persisted up to the present time. Can retain nothing except a little hot milk. Has no pain in stomach; no vomiting of blood.

Physical Examination.—Patient is an old man very much emaciated, a German. All bony outlines are prominent. Pupils equal and react to light and accommodation. Tongue is pale, pulse irregular in volume, arteries compressible though thickened. Chest well formed but extremely emaciated. Abdomen is scaphoid. Lungs are hyperresonant; vesicular murmur and vocal resonance diminished. Heart. Outline difficult to obtain on account of hyperresonance; sounds at apex show a slight systolic murmur. Abdomen. The only thing felt is a prominent pulsating aorta. The muscles in the neighborhood of the stomach are very rigid rendering palpation unsatisfactory. Liver dulness limited to a narrow zone of two inches.

June 28, 1901. Patient is getting weaker, vomiting almost everything eaten. Dulness at interscapulovertebral space. Esophageal bougies pass easily; larynx apparently normal. A small tumor is seen on pharyngeal wall.

June 29, 1901. To-day the CO_2 test was tried on patient. A large quantity of froth and a little blood were vomited or rather regurgitated immediately. After giving it the stomach was not distended. The patient was extremely prostrated immediately after its use and never rallied. He died on the following day.

AUTOPSY BY DR. PEARCE.

Pathological Diagnosis.—Carcinoma of the esophagus and stomach, cholelithiasis, perichole-

cystitis. The stomach is small, distended with a little gas. At the junction of the esophagus and stomach a hard mass may be felt externally. Esophagus shows agonal digestion in its middle part. Beginning 5 cm. from the cardiac orifice there is a mushroom-like tumor, soft in consistency, taking in entire diameter. This is continuous with a similar growth extending to the stomach at orifice involving the entire circumference. The central portion of both tumors is ulcerated and the ulcers are surrounded by this soft, elevated, mushroom-like growth. Surface is much pigmented and of a slaty color.

The fact that the gas generated by the CO_2 did not distend the stomach fixed the diagnosis above or at the cardiac end of that organ, and the clinical diagnosis of carcinoma of the esophagus and cardiac end of the stomach was made during life.

The diagnosis of the situation of the lesion in the previous and the next case to be reported was made because of the absence of epigastric fulness that follows the ebullition of the CO_2 gas in the stomach.

As it is always desirable to make a diagnosis during life this is an important point, but the danger connected with its use offsets its utility. To illustrate the localizing power of CO_2 gas the next case is a striking example.

Case III.—C. M. aged fifty-two years. Admitted April 12, 1901. Chief complaint, pain just below and to the left of the sternocostal angle. Nothing is known concerning his family history.

Previous History.—For years patient has had a feeling of discomfort at the point above mentioned. After eating there would be a sensation as of the esophagus being dilated. Ever since an attack of influenza six weeks ago his trouble has been exaggerated. Lost much weight. Appetite very poor.

Physical Examination.—Patient is very thin. Sclera is of a muddy color, tongue is brown. Pulse regular. The chest is spare and musculature poor; all bones prominent. Abdomen is retracted and of doughy consistency. At intercostal angle there is tenderness but no mass can be made out, the pulsating aorta is easily felt. Right rectus muscle very rigid. Heart and lungs show nothing abnormal.

April 22, 1901. Emaciation extreme, voice hiusky—increasing in intensity from day to day. Examination by Dr. Gleason shows paralysis of vocal cords and chronic inflammation of the mucous membrane.

April 26, 1901. Patient is getting weaker, taking very little nourishment, vomiting a quantity of black fluid with clots. Microscope showed latter to be blood.

May 19, 1901. No change since taking of last note except the increasing emaciation and weakness, no vomiting. The CO_2 test was given today, no change noted in the abdomen, stomach apparently not affected. The distress noted in Cases I and II was seen here. The patient seemed dazed after its administration and he was in a more or less semiconscious condition till the time of his death on May 24, 1901.

Clinical Diagnosis.—Carcinoma of the esophagus.

AUTOPSY BY DR. PEARCE.

Pathological Diagnosis.—Dilatation of esophagus, suppuration of tracheal lymph-nodes, chronic diffuse nephritis, chronic pleurisy, edema of lung, chronic splenitis, atrophy of right testicle. Esophagus dilated throughout entire extent, 31 cm. Greatest dilatation at cardiac end with circumference of 18.3 cm., 4 cm. in middle, 15 cm. below the beginning, circumference is 12.5 cm.; mucosa thickened, showing irregular, elevated, grayish, finely granular plaques between, which are depressed smooth black areas. This appearance is uniform throughout the entire extent. The glands about the trachea and esophagus are greatly enlarged and contain soft puriform, almost cheese-like, substance. The largest of the softening glands measure 5 x 3 cm. There is no calcification and they do not suggest tuberculosis; no condition is found which would explain dilatation of the esophagus by traction. The recurrent laryngeal nerve courses over the enlarged glands.

All these cases are interesting on account of the pathological findings; the dissimilarity of lesions with like symptoms is unique; the fact that vomiting did not occur immediately after eating in Case III is on account of the extreme pouch of the esophagus.

It must be evident from these observations that the use of CO_2 gas in inflating the stomach is a serious matter. It is infinitely more dangerous where there is disease of the esophagus and cardiac end of the stomach. This may be due to the pressure exerted within narrow limits. The test must be used, if at all, with discretion and the cases must be selected. The lives of all the above patients were undoubtedly shortened.

I wish to extend my appreciation and thanks to Drs. Wm. E. Hughes and H. B. Allyn for their kind permission to use the cases, without which this paper could not have been written.

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Sulphite of Sodium as Conservative Agent.—This substance is able to check the growth of bacteria in as weak a dilution as 0.05 per cent., but the best effects are obtained with 0.5 per cent. The bacteria are not directly killed, but are merely prevented from multiplying, and the normal color of the meat will be preserved. E. Altschüler (Arch. f. Hyg., Vol. 48, No. 2) does not think that the use of this chemical should be permitted by law; though it is relatively harmless, it will improve the appearance and remove the odor from meat which is really already in advanced putrefaction.

ON THE VALUE OF URETERAL CATHETERIZATION AND URINE SEPARATION WITH HEMOCRYOSCOPY AND URINOCRYOSCOPY IN SURGICAL DISEASES OF THE KIDNEY.*

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Renal surgery has kept well apace with the rapid strides made in the surgery of other organs. However, the good showing in the surgery of the kidney has not been, as in many of the other instances, due so much to the improved technic of the operation, as to the better methods of diagnosis.

The splendid results in renal surgery, which are now being reported from all over the world, are encouraging in the extreme, and are splendid monuments to greater precision in diagnosis. To analyze briefly the causes of the high mortality rate of a decade or more ago, we find the principal reasons for the postoperative deaths to be (1) the congenital absence of a second organ, which is assumed to be present; (2) the degeneration of the organs, whereby a partial or total disappearance of the same has occurred; (3) a pathological condition of the other organ, which is of normal shape and size, but which is functionally more or less inert. To eliminate these factors from the causes of postoperative deaths is the object toward which the clinicians must direct their efforts.

How are we to diagnosticate the presence or absence of a second kidney? The methods formerly in vogue and still recommended by some, are inspection, percussion, palpation, and actinography. A mere mention of these methods is enough to show that none has any absolute worth. All are unreliable, and at times highly inaccurate. Much more reliable are the methods of cystoscopy, ureteral catheterization, and lastly the exploratory incision.

When ureteral catheterization is possible, a definite demonstration of the presence of a kidney can be established, especially if a stilet be used and an X-ray picture taken. If catheterizing the ureter be not possible, then a separation of the urine by one of the different separators should be practised and in this way establish the separate flow of urine.

Having determined the presence of a second kidney, how can we best determine the functionating capacity of that organ? By the functionating capacity of the kidney is understood the power to elaborate its peculiar excretion. If there is to be a cutting operation on a kidney, it is not enough to know that there exists a second kidney, but it is absolutely necessary to know that there is present a second kidney in good enough condition for the preservation of the patient. In order to establish this it is necessary to obtain the urine from each kidney separately. For this purpose two methods are known, the direct and the indirect. The direct method consists in obtaining the urine directly from the ureter or kidney by ureteral catheterization; the indirect, by getting the urine separately in the bladder, or by compressing one of the ureters. This latter method is probably no longer in use.

When it is possible to do a ureteral catheterization the separation is absolute—and this should be the method of choice. True, it is more difficult to do, but it is more certain in its results. Not only is the result of separation more definite, but the source of any pathological products is determined; *i.e.*, whether in the upper or lower urinary tract.

The objections to catheterization are well known, but not well founded. They are (1) that the method is unsafe, (2) that it is difficult of application. My own experience is still too limited to be of great value but in upward of 50 cases in the past eight months there have been no symptoms whatever of any infection, and little or no reaction. Those of larger experience report equally good results. That it is of difficult application cannot be denied, but that it can be done safely is enough to recommend it.

The advantages claimed for the different separators and segregators are, their ease of application and the less danger of infection. It has been my experience that the use of any of the segregators or separators is more painful and annoying to the patient than the cystoscope, especially in the female, for in this class of cases the cystoscope can be removed after the catheters are introduced, and there remains absolutely no discomfort while the urine is secreted.

The worst objection, however, to the use of a separator or segregator is that it furnishes no clue whatsoever as to the source of the pathological elements found in the separate specimens. An ulceration in the bladder may show pus and blood in one specimen and nothing in the other, yet both kidneys be absolutely healthy.

All advocates of these instruments recommend that the cystoscope be used in addition, to diagnosticate the source of the trouble; if, then, the cystoscope must be used to clear up the location of the lesion why not use the catheters at the same time? I use the separator or segregator only when catheterization can not be done, and this occurs in not more than 15 per cent. of the cases.

The obtaining of the separate urines is, however, not the only use for the ureter catheter, but probably the greatest. The additional diagnostic values of the cystoscope and catheter are; (1) whether the bladder or kidney is the seat of the lesion; (2) the presence and location of a stricture of the ureter; (3) the presence and location of a stone in the ureter; (4) a differential diagnosis between diseases of the kidney and surrounding organs, and in this last application I was recently able to clear up two very interesting cases. The one case was a most unusual one, of a male sixty years old, in whom, during the passage of a renal calculus, appendicitis developed; a mass formed over the course of the right ureter in the inguinal region, and by the usual methods

* Read at the Ohio State Medical Society at Dayton, June 3, 1903.

of inspection, palpation, etc., it could not be determined whether we had to deal with an appendiceal abscess or an inflammatory mass around the right ureter. The ureteral catheters were inserted and passed freely; urine flowed with equal rapidity from both sides. A diagnosis of appendiceal abscess was made and verified a few minutes later by opening a large abscess, caused by a necrotic and broken down appendix. The case made a splendid recovery.

In another case of a boy, eighteen years old, who had repeated attacks of right sided pain, chills and fever, muscular rigidity, vomiting, etc., no positive diagnosis could be made. Two physicians had diagnosed appendicitis, one a renal calculus, and still another an inflammation of the gall-bladder. At the time the case was presented for examination a mass could be distinctly outlined in the right hypochondriac region; there was muscular rigidity and great soreness.

From the physical signs present it seemed as though it might be any one of the organs before mentioned. There was, however, a history of having found on several occasions a brick dust sediment in the urine. Double ureter catheterization was done, and a "surgical kidney" on the right side diagnosed. He was operated upon and an infected hydronephrotic kidney removed. A complete recovery followed.

After the urine has been obtained from each kidney, What is the best method for ascertaining the amount of work being carried on by each organ? Albumin in the urine has been the one symptom indicative of a diseased kidney, upon which the profession has relied for many years. No albumin present, has until recently meant no disease. The discovery of casts in the urine, when there was no albumin, changed the significance of the presence of albumin, and caused the profession to seek other means of diagnosis.

The estimation of the total amount of solids in twenty-four hours, especially the amount of urea, has been of great aid in determining the sufficiency of the kidneys, but as this may vary with the quantity of nitrogen taken, upon the amount of exercise, and upon meteorological changes, etc., it becomes a rather unreliable symptom unless all the above conditions are taken into account and the period of examination extended over a number of days.

Slightly less objectionable but not, however, much more satisfactory is the method by which the excretion of certain substances introduced into the body is determined. The first indication of attempting to utilize this method as a diagnostic measure is to be found in the writings of Beauvaire, 1853. He saw in the absence of the odor of asparagus from the urine a characteristic symptom of nephritis. Since then the intolerance of opium, quinine, salicylic acid, mercury, etc., have been held at different times to be an indication of renal insufficiency.

Of late the amount of discoloration of the urine produced by the introduction of methylene blue into the body has gained a more general attention, but recently it has been found that it only tests the permeability of the kidney, and is now more or less abandoned as a diagnostic measure.

Another method which is in part dependent on the secretory function of the kidney, is the so-called phloridzin method, by which not only its secretion but also its chemical activity may be determined. It has been observed when phloridzin was injected into an animal, after a lapse of twenty or thirty minutes, sugar appeared in the urine, the amount varying with the condition of the kidney. It was concluded, therefore, that it not only showed the permeability of the kidney, but also the functional activity of the renal cells.

Casper and Richter have worked this out clinically, and state when combined with ureteral catheterization it is to be classed as one of the valuable aids in the determination of the functions of the kidneys.

Besides the various chemical methods just mentioned there remains another method, which is probably destined to play a greater part in the diagnosis of the renal function than any other that has yet been introduced. This method is cryoscopy. To this procedure I desire particularly to call attention. As is well known, the greater the number of molecules in a given solution the lower will be the freezing point below that of distilled water, and in this way the amount of solid constituents in the urine and blood can thereby be obtained.

Dresser was the first to apply this to urine, but it was Koranyi who first gave this method its practical application in demonstrating thereby the secretory activity of the kidney. This work of Koranyi created a very great interest among the scientific clinicians, and much has been done and written on this subject. While none attribute to it absolute worth, all agree it is of the greatest supplementary aid. The normal freezing point of the urine varies from 1 to 2.3 below that of distilled water. The normal freezing point of the blood being .56 to .57.

Kümmel has made a study of the freezing point of the blood in 265 persons including 137 subjects with normal renal functions. If the freezing point remains within normal limits, .55 to .57, in a case of unilateral nephritis, the kidney can be removed without apprehension; that is to say, the other kidney is doing compensatory work. In 40 such cases recovery was uneventful and the renal function undisturbed, while in every case in which the freezing point was .59 exhibited a sluggish renal function afterward and also albuminuria.

These facts are further established by the results in the cases in which the freezing point was .58 to .81. The assumed renal insufficiency was confirmed in every instance by the autopsy or operation. Nephrectomy is still possible at .50, but .60 is the extreme limit of permissible nephrectomy. It has been found in nearly all the cases when the freezing point of the blood is low, that of the urine will be high. Urinocryoscopy with ureteral catheterization and urine separation has

been of the very greatest aid in my clinical experience.

The freezing of the urine is a comparatively simple matter. At least sufficient urine to cover the bulb of the thermometer should be used. The Beckmann apparatus is probably the best instrument. The freezing should be done while the urine is fresh.

In two cases of tuberculous pyonephrosis, in one case of a suppurating cyst of the kidney, in one of pyelitis and infected hydronephrosis, and in one of miliary tuberculosis, the functionating capacity of the supposed healthy kidney was ascertained by urinocryoscopy. All of these cases showed a renal sufficiency. Nephrectomy was done in each case, and all made good recoveries. An equally good result was obtained in a case of nephrotomy.

In two cases, one of hematuria and one of pyuria, operation was advised against because of renal insufficiency. The justification of this advice was demonstrated when both cases succumbed to uremia, one ten days and the other three weeks after the examination.

In a number of cases pus has been demonstrated in one or the other kidney, but in all of these cases a good functionating capacity was present. The kidney substance was probably not much involved, the infection being mostly in the pelvis of the kidney. In such cases the administration of urinary antiseptics and irrigation of the pelvis has been of very great benefit.

The writer does not offer this method of cryoscopy as a substitute for the other methods of examination, for it in no way determines the anatomical condition as shown by the presence of pus, casts, red corpuscles, and micro-organisms, but offers it only as an important supplement, and as the best known way at present of determining the functions of the kidney.

The deductions from a previous paper on the same subject are submitted in conclusion:

1. Before doing a cutting operation upon a kidney—especially before doing a nephrectomy—the presence of a second functionating kidney should be established.

2. The best and safest method for ascertaining the presence of a kidney is by the aid of cystoscopy and ureteral catheterization.

3. The function of the kidney is best determined, in order of importance: (*a*) By the freezing point of the urine; (*b*) by phloridzin glycosuria; (*c*) by the quantity of urine excreted; (*d*) by the freezing of the blood.

4. The most reliable method of obtaining the separate urines is by the ureteral catheter.

Colorado Medicine.—The Colorado State Medical Society has decided to publish a monthly journal. This will include its Transactions, replacing the annual volume. But it will perform a more important function, as the official organ of the State Society and the component County Medical Societies. It will publish official announcements of these societies and furnish a general means of communication between their officers, committees and members. We wish it success.

SOME EXPERIMENTS AND CONCLUSIONS IN HYPNOTIC THERAPEUTICS.*

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My attention was first called to hypnotism in a medical way in 1898. In the summer of that year I met a lady who assured me she was a natural born "magnetic healer." She affirmed that by a few strokes of her hand she could put her husband (who was an invalid) into a sound sleep. He was subject to various neurotic pains, which she could always control by stroking. Numbers of her friends assured me they could feel a pecular thrill when she touched them. I had never heard hypnotism mentioned in my medical course, and had always considered it a humbug, but here were a number of reliable people whose word was not to be questioned, who assured me they could feel *something* pass from this lady's hand to their own. What was it? Animal magnetism, as she asserted? or hypnotic suggestion? It was two years later that I began some experiments on my own account. My wife was affected with pains along the course of the sciatic nerve, and one night I said carelessly, "Oh, I can stop that in two minutes." I massaged both nerves lightly and told her her pain was gone; she moved them and felt no pain. She was not nearly so much surprised as I was. From this I concluded that hypnotism was not all humbug, so I purchased a set of good books on the subject and went to work to investigate more thoroughly. I have been thus prolix, to show that it was no hypnotic grand-stand play that brought me to a study of the subject, and that, at the beginning, I was anything but prepossessed in its favor.

Following instructions of Yerkes, of Harvard, I could readily hypnotize hens and discovered that some were more easily influenced than others. I met a young lady who told me she had been hypnotized several times, and I had no difficulty in putting her in the rigid, so-called cataleptic state.

After this I began to use my newly-acquired accomplishment freely as a means of relieving pain in all suitable cases, such as neurotic headaches, insomnia, and all kinds of obscure functional nervous troubles, and as an aid to hasten the effects of chloroform in anesthesia. I was successful in stopping night-sweats of phthisis, and put a patient (who had an idiosyncrasy for morphine) to sleep in the agonizing crisis of locomotor ataxia.

I wish now to call attention to a few, to me, remarkable cases before attempting to draw conclusions:

Case I.—Mrs. G., aged fifty-three years, married, no children; had been an invalid for twenty years when first coming under my care, and had all the clinical symptoms of phthisis and a bountiful supply of the *Bacillus tuberculosis* in her sputum. She was very weak; had precordial pains and could not sleep. I had exhausted the pharmacopœia in endeavoring to give her rest. It occurred

* Read before the Thirty-fourth Annual Session of the Medical Society of Virginia.

to me one evening that this would be a heroic test case for hypnotism. I put her in a comfortable position, and in ten minutes I had her sleeping soundly and she slept all night. As long as she lived I could make her comfortable by a few strokes of my hand and a few firm words of suggestion or command. Her husband suffers from locomotor ataxia, and has an idiosyncrasy for morphine, which crazes him. I had run the gamut of anodynes in his case when the crisis was on and had given him very little relief. In his case I used a revolving mirror, fixing the light behind him and getting the mirror in such position that it would flash the rays of light in his eyes. He was in such pain that his cries could be heard a block away. To quiet his craving for something to take I gave him five grains of bromide, and fixed his attention on the mirror, explaining to him that the rays of light would paralyze the ocular nerves, etc., and he would soon fall asleep and be free from pain. Difficult as he was to control, in fifteen minutes he was sound asleep, and he slept for two hours. I then put him to sleep again, and he slept all night without rousing. In the room with this patient was a half-grown puppy, and the colored nurse called my attention to him just as I had got my patient asleep. The puppy had been attracted by the bright revolving mirror, and when I looked at him he was blinking and unsteady on his legs, and in a couple of minutes fell over against the hot stove, which awoke him.

Case II.—The next case I wish to speak of was a stout woman, aged sixty-two years. She suffers with valvular trouble, and has asthmatic attacks at times. She became frightened and precipitated an attack one day while I was away. When I saw her, some three hours later, she had the most irregular pulse I ever felt, and had an abiding fear that her end was near. I got her to bed, and with a few quiet strokes over the temples and appropriate suggestions she went to sleep, and now, after some nine months, she has not had a recurrence.

Case III.—My next case worthy of mention was one of delirium tremens. Mr. M., a married man and a farmer; had at one time been a pillar of the Church, but, like many pillars, had fallen. When in his cups, that seemed his chief grief. When I went to see him, he was in a particularly bad fix, his horses were running away with him and deacons were putting him out of church. He would not take medicine nor allow me to use a hypodermic, and he was too powerful a man to think of using force with, so I decided to try hypnotism. It was out of the question to try ordinary methods, because I could not hold his attention; so assuming a tragic air, I shouted to him, "Don't you see the water around your feet, they are trying to drown you, get to bed, quick!" He took the suggestion readily, and seemed in abject terror of the water. I was then able to control him, and in half or three-quarters of an hour had him asleep. I went home hoping to hold him till morning, but he awoke in two hours, though more rational, and in a couple of days was over his attack. He had another spell six months later, however, and committed suicide.

Case IV.—A Bohemian young man came to me from Pennsylvania with some obscure nervous trouble. He had been to see several specalists and was growing progressively worse. He had vague pains in calves of legs and thighs, weak back; was unable to work and had constant headache and roaring in his ears. Strange to say, none had thought to examine his ears; and I had been treating him for two weeks before it occurred to me to look for impacted cerumen. Both auditory canals were packed full, and how he could hear so well with them in that condition is a mystery to me. I syringed them out, and thought I had solved the riddle of his case, but in a few days he began to grow worse. I had his eyes examined and his vision was 20—20, no trouble there. I had been using electricity, superheated hot air to spine and cold douches. As a last resort, I tried hypnotism and in ten days I had him out in the field at work. Of course, I gave him tonics in conjunction with the other treatment; but the fact remains, that he did not commence to mend till I had hypnotized him several times.

I have thus briefly run over these cases to show effects, or, better, results. I will now try to draw some conclusions. I am not quite prepared at this time to follow the latest teaching as to the action of, or cause of hypnotic sleep. Nearly all modern writers claim that suggestion is all there is to it. I cannot believe this; I have hypnotized chickens by holding their feet, laying them on a board and putting a grain of corn in front of their beak. I can see no suggestion in this. As I have stated before, I involuntarily put a puppy to sleep with a revolving mirror. To my mind, the whole keynote of the phenomena is concentration; suggestion only helping to hold the mind or concentrating it.

It would not surprise me at all to find the students of the science (if I may so call it), at some later date go back to the teaching of Mesmer, and show that there is a psychical force that produces the phenomena we call hypnotic sleep.

I do claim, however, (and believe that further research will bear me out), that hypnotism has a definite physiological action, as much so as any drug of the pharmacopœia. So far as I have been able to find out no one has ever advanced this theory, and thereby hangs the secret of much of the neglect of one of the most powerful weapons in the armamentarium of the physician. I do not claim that it is a cure-all. I do not even believe that every physician is capable of exercising it successfully, but to a large body of the profession it is a wonder-worker in a great many cases. Up to this time, as I have said, it has been used empirically and mostly by quacks and advertisers; but because a quack uses a thing that is good it is no reason that we of the regular profession should ignore it, and if we can show that its effects are at all times the same or nearly the same—that all patients submitted to its action behave the same, I think we are justified in claiming that it has

a definite physiological action. I believe that its action is simply this: attention is concentrated on, or by something to such a degree that strain is put on the vasomotor nerves, resulting in a paresis of the whole vasomotor system, with a consequent diminished blood pressure. A patient subjected to hypnotic suggestion invariably (in my experience) starts off with a rapid small pulse, a little later it gets harder slower and full, and as hypnosis comes on tension diminishes, and if you put one of them into deep somnambulism, the pulse is flaccid and slow. As I said before, blood pressure is diminished, what results? Blood is very easily determined to any portion of the body, because the vessels are wide open, with but one exception. I believe that whereas in physiological sleep the brain is anemic, in hypnotic sleep it is congested, for though the body is asleep the brain is still active and blood is bound to circulate more freely where there is most activity. Now, then? I concentrate a patient's attention on a rapidly revolving mirror, and suggest to him sleep. I say you are bound to sleep if you keep your gaze on it. He concentrates his attention on it, all else is blotted out, his whole attention is on that mirror, and sleep dominates him; blood is pouring into the brain, where activity alone is going on; surroundings get hazy and he does not notice anything but that dominant suggestion, sleep, and as a result he is soon asleep. Well, what happens then? We will suppose he is a man who has been troubled with a mild neuritis of the leg and foot. He is sleeping soundly, with a brain turgid with blood. I say to him, "You feel no pain in your leg or foot." His attention is now directed to that foot, there is a rush of blood to the particular brain center that presides over that limb, the brain cells of that center are crowded together and massaged against one another by the flowing blood, gradually nutrition there (because of increased metabolism) is increased.

The center that appreciated pain no longer appreciates it, not by any wonderful psychical process, but by a simple reasonable physiological process. Well, some one says, "You have not removed the source of irritation; when the patient wakes the pain will return, you have not increased metabolism in the limb." I am not too sure of that. True, if there is any material organic change of the tissues that is causing the irritation, it may not be possible to cure it except by extended treatment, and perhaps not then; but at the time you draw the patient's attention to the painful area metabolism increases in that part as much so as in the center presiding over it. Tissue changes take place, the parts are flushed out because of diminished tone of blood-vessels, and the minute vessels are capable of taking up larger extraneous particles than they would at any other time; and they are so taken up and swept out of the tissues and into the general circulation and on out of the system.

To recapitulate then, my idea is that the phenomenon of hypnotism in its action on the human economy is a definite physiological process. It has its psychic side to be sure, but I do not care to discuss that at this time. I believe that it cures pain and many functional troubles by a process as easily understood as is the physiological action of—say digitalis or opium. I know that some of my deductions are not capable of proof, but how many things in medicine are? I have carried on my studies and experiments during the exigencies of an extensive country practice, and this thesis is far from what I would have desired. But if it will help to stimulate research in this field by some better prepared and more fortunately situated than myself, and if I have succeeded in demonstrating that hypnotism is a therapeutic agent too good to be left to charlatans, my labor will not have been in vain.

MEDICAL PROGRESS.

MEDICINE.

The Overlaying of Infants.—England exceeds all other countries in the proportion of deaths of infants under one year of age from suffocation in bed with their parents or nurses. William W. Westcott (Brit. Med. Jour., Nov. 7, 1903), coroner for N. E. London, reports that during the recent ten years there were 15,009 overlain infants in England and Wales. In Liverpool, during one year, there were 143 cases out of 160 inquests. In London the death rate from this cause is shamefully high, although probably the records show a somewhat lower rate than is actually the case, on account of the difficulty of diagnosing the conditions. The factors aiding and establishing this diagnosis are skin discolorations, pressure marks, the most important of which is flattened nose. In addition to this there are often present the well known signs of suffocation. It is probable that if a drunken mother should nurse her infant before going to sleep, the baby may be more or less stupefied by the alcohol in the milk, and so fall a prey to easy suffocation. These cases very naturally are not apt to give the grosser signs, because they may succumb to the simple pressure of the bedclothes. The English law allows parents to take infants to bed with them. It probably gives opportunity for a vast number of infanticides. Under the old penal code of Prussia, mothers were forbidden, under pain of imprisonment, to have children under two years of age sleep in bed with them. In Westphalia, and, indeed, throughout France and Germany, this form of infantile death is almost unknown. This happy condition probably arises because in that section of the continent the drunken mother is unknown. In London, Liverpool and Glasgow, however, she is a frightfully common sight. In the present condition of the English laws it is not possible to secure conviction of parents for the manslaughter of infants by overlaying, and the appalling frequency of the condition would seem to justify the enactment of suitable preventive laws.

Results of Organotherapy in Addison's Disease.—Cases of Addison's disease are so uncommon that it seldom occurs that any one physician sees a sufficient number of these patients to make his conclusions in regard to the value of treatment of any avail. E. W. Adams (The Practitioner, Oct., 1903) has collected 97 cases from the English, French and German literature, all of which have been treated for a time at least with some form of extract from the suprarenal gland. Many of these were treated but a short time, and some of them were practically moribund when the treatment

was begun. Furthermore, it was, of course, impossible to be certain of the diagnosis in all cases on account of the numerous sources from which they were taken, and also because the diagnosis is frequently a very difficult matter even to the most skilled. Autopsy records of a considerable number were also obtained to confirm the diagnosis whenever possible. The results show that 7 cases were made distinctly worse by treatment; 43 cases derived no real benefit; 31 cases showed marked improvement, and 16 were apparently permanently cured. The best results were obtained by the use of the first gland, given by mouth, and the fluid or solid extract given in the same way. Three cases of suprarenal grafts were all apparently made worse by the operation. It would appear, therefore, that there is a certain class of cases of Addison's disease which derives indubitable benefit from the exhibition of some form of suprarenal substance, though in any given case it still remains impossible to determine its probable response to the treatment. Although the chances of recovery are comparatively slight they are certainly much better with this mode of treatment than with any other.

General Views on the Etiology of Infectious Diseases.—In the first of the series of Harben lectures delivered in King's College, London, F. Hueppe (Jour. of State Medicine, Nov., 1903) treats of the general causes of infectious diseases. In addition to the two opposed views—namely, the one supported by Pasteur and Koch, that an "animated contagium" is the external cause of a specific infective disease, and the other, that the "diseased cell" is the entity of the disease, as enunciated by Virchow, there still exists a third opinion. It is recognized by Simon, Farr and Parkes in England, and Pettenkofer in Germany, that external conditions are of great importance in the propagation of infectious disease. The author was the first to try to bring these three theories into harmony with one another, and demonstrated that for an infectious disease to break out, the cells of the body, the pathogenic microbes and the external conditions must be in energetical or dynamical relations with one another. The author believes that individual "predisposition" rather than a predisposition of the species or race, as maintained by Baumgarten, is a fact, and must be accepted by all naturalists. Rather than predisposition being a negative fact—negative, from the absence of immunity—it is something positive, and a "correlate" to the immunity. Predisposition of the protoplasm corresponds to the constitution of the molecules in chemistry. Protoplasm, as active molecule, cannot be recognized by the analytic and synthetic methods of chemistry, but it can be recognized by the biological method—by means of the reaction to a "stimulus." The latest physical theory of the action of the enzymes teaches that the stimulus, as enzyme, can produce an effect if it has corresponding groups in the living molecule. This also applies to the meaning of the specificity of the pathogenic bacteria as stimuli. "Physiological assimilatory stimulus agrees with the specific cell protoplasm as a good key fits a lock, whereas pathogenic bacteria agree with the same specific protoplasm as a false or skeleton key fits a lock, which lock becomes either destroyed or opened." Infection and immunization is the biological method of recognizing the predisposition which cannot be demonstrated directly. The predisposition of the child is different from that of the adult. Moreover, besides his inherited nature, man also has a "second nature," dependent on the normal evolution and on the influences of environment and internal causes. Thus, cold, heat, damp, hunger, thirst, mechanical injuries, alcoholism, or other forms of intoxication, constitutional illnesses (as diabetes or rickets) can augment the predisposition to infectious disease. Pathogenic bacteria have no unvarying specific character; *e.g.*, bacteria of diphtheria, pneumonia, etc., have often been found in the bodies of healthy men; the same specific bacteria do not affect all animals alike with the same typical disease, diphtheria bacilli may cause local diphtheria, or acute blood-poisoning or paralysis; similar symptoms can be evoked by entirely different germs, which can also produce identical anatomical changes. Illness is a function of changeable predisposition, changeable stimulus, and changeable external condition. Each one of these factors can vary from minus to plus, from nought to infinity. If one mark illness "I," predisposition "P," stimulus "S," and condition "C," one has, as a general expression, $I=f$ (PSC). If the conditions are constant or without special value, then $I=f$ (PS). Every one of these factors can be composed of several factors, as, for instance, the predisposition "P" can be inherited (p) and acquired (p'); then $I=f$ (p+p', SC). Recognizing disease as a function and being able to express the different factors mathematically as curves, pathology acquires a certain degree of exactitude. The different methods of hygiene as statistics, post-mortem examinations, chemical researches, physical and biological experiments must all work together in order to recognize the different single factors.

Caisson Illness and Diver's Palsy, an Experimental Study.—The following conclusions were derived by L. Hill and J. J. R. Macleod (Jour. of Hygiene, Oct., 1903), from the experimental investigation of this subject: Compressed air above 5 atm. lessens the CO_2 output, and lowers the body temperature in mice, rats and young rabbits. Oxygen at and above 1 atm. has the same effect. It is a sign of oxygen poisoning. Compressed air at 10 atm. is more damaging—at least to small animals—than oxygen at 2 atm. Compressed air increases the loss of body heat both because it is a better conductor and because it is saturated with moisture. The saturation of the air with moisture in caissons does not prevent evaporation from the body, because the skin temperature is above that of the air. The wet air by damping fur or clothes increases loss of heat. Highly compressed air may possibly interfere with the diffusion of CO_2 from the alveolar air, and may, owing to increased friction, hinder the passage of air in and out of the air-tubes. The nitrogen output in dogs is not altered in any noteworthy degree by exposure for six hours to 8 atm. air. Inflammation and consolidation of the lungs are produced by exposure to 8 atm. air for over twenty-four hours. One and a half atm. of pure oxygen has a similar effect. The higher the oxygen tension the more rapidly does the inflammation ensue, *e.g.*, 6 atm. O_2 produces marked congestion in two hours. It does not seem likely that inflammation of the lungs should be produced in the pressures and times of exposure usual in caissons. Excised frog's hearts, muscles and nerves are not rapidly poisoned by even 50 atm. O_2. A heart will beat more than an hour exposed to this pressure. The vagus nerve endings appear to be paralyzed by such exposure, while inhibition can be obtained by stimulating the crescent. All animals investigated, vertebrates and invertebrates, are instantly convulsed and killed by exposure to 50 atm. O_2 convulsions are frequently produced in vertebrates by exposure to 4—5 atm. O_2, while exposures to 6—25 atm. O_2 produces dyspnea and coma, and the convulsive stage does not usually appear. Cleaning movements, salivation, gaping, jerky, deep respiration, are symptoms which precede the convulsions, and coma soon follows them. With air pressures up to 12 atm., convulsions are not observed. Salivation, dyspnea and coma are the symptoms. The blood gases increase in compressed air or oxygen according to Dalton's law, but

the process of complete saturation of blood and tissues takes some time. The circulation is unaffected mechanically by compressed air. The cause of caisson-sickness is the escape of gas bubbles in the blood-vessels and tissue fluids on decompression (release of compression). An animal exposed for four hours to 8 atm. air and quickly decompressed is like an opened bottle of soda water. The fluids of the body generally effervesce. The effervescence can be studied in the circulation of the frog's web or bat's wing, the animals being enclosed in a suitable chamber. It takes a little time for the bubbles to grow to an appreciable size. Recompression causes the bubbles to go into solution, and if applied quickly enough the circulation recommences. The bubbles after rapid decompression can be seen post mortem in the blood-vessels, in the heart, retinæ, aqueous humor, connective tissue spaces, etc. The alimentary canal is blown out with gas. The bubbles produce cyst-like cavities in solid organs, *e.g.*, in the central nervous system, the liver. The cells are compressed round these cysts. In the case of oxygen, an animal may recover after an extraordinary amount of this gas has been set free by decompression. The nerve cells are not killed by the oxygen bubbles, and the animals are convulsed and exhibit hyper-reflex-excitability. The varying symptoms of caisson-sickness are due to the varying seat of the air-emboli. Young men escape the disease owing to the elasticity of their tissues and greater facility of collateral pathways of circulation. By the choice of suitable men, and proper regulation of the period of compression and decompression, caisson and diver's sickness can be avoided.

Granuloma of the Nose, Due to Iodide of Potassium.—A case of specific disease of the nose and larynx and a granuloma on the tip of the nose, is reported by C. P. Crouch (Bristol Med.-Chir. Journal, Sept., 1903). The chief point noted about this rare condition is that its nature is apt to be overlooked, and consequently the iodide to be continued. In this case the diagnosis was rendered more difficult by the fact that some undoubted iodide spots on the forehead disappeared, while the granuloma increased. Acne due to iodide is apt to become tuberous. Iodide rashes are more apt to occur if there be either cardiac or renal disease present, causing a defect in elimination. An iodide rash may begin in twenty-four hours in pot. iod., gr. v t.i.d. The case reported is also of interest, inasmuch as the patient attributed his condition to "grease" from which a horse under his care was suffering.

Lime Dust in Pulmonary Tuberculosis.—In order to determine the practical value of inhalations of lime dust in pulmonary tuberculosis, a series of tests have been made by P. Reckzeh (Berl. klin. Woch., Nov. 9, 1903) in eight patients which presented various degrees of involvement from slight apical lesions to extensive double cavity formations. It has been asserted that workers in factories where lime in the form of dust was present, were markedly benefited if they were afflicted with tuberculosis. The patients on whom the tests were made were subjected to daily inhalations of finely powdered, freshly calcined lime, for periods of five minutes or longer. The results obtained were not encouraging as the objectionable features far outweighed any possible benefits. Chief among these were the increased irritant cough, nausea and sometimes vomiting, loss of appetite, a feeling of lassitude, burning pains in the chest and severe headaches. No objective changes in the pulmonary lesions could be detected.

Value of Sanitarium Treatment in Tuberculosis.—The permanency of the beneficial effects of this method of treatment have been made the subject of a research by L. Brown (Jour. Am. Med. Assoc., Nov. 21, 1903). He has made an analysis of fifteen hundred cases discharged from the Adirondack Cottage Sanitarium from two to eighteen years ago and adheres to the classification of the types of the disease proposed by Trudeau. In all, 33 per cent. of cases are alive, 38 per cent. are dead, and 29 per cent. are untraced. Of those alive, 22 per cent. are well, 4.6 per cent. are arrested, 3 per cent. relapsed and 3.7 per cent. are chronic. Taking all the cases traced (1,066) together, 31 per cent. are well, 6.5 per cent. are arrested, 4 per cent. have relapsed, 5.2 per cent. are chronic and 53.3 per cent. are dead. Of the incipient cases 66 per cent. are well and 21 per cent. are dead. Of the advanced cases, 28 per cent. are well and 52 per cent. are dead; while of the far advanced cases 2 per cent. are well and 90 per cent. are dead. No doubt, however, more of the untraced cases are dead than these figures would indicate. In 10 cases it is known that death was due to other causes than tuberculosis.

A New Method for Diagnosing Typhoid.—The clinical value of the Gruber-Widal serum reaction is more or less restricted by the necessity for laboratory facilities and the time required in getting results. In order to make the Widal test more practical, the following conditions, according to M. Ficker (Berl. klin. Woch., Nov. 9, 1903), must be fulfilled: (1) the place of the living cultures of typhoid bacilli must be filled by a substitute as the physician in general practice usually does not possess the former; (2) the preparation must contain the specific agglutinating properties and possess keeping qualities; (3) the reaction must be visible to the naked eye, must always result uniformly and not require any extended period for its observation, and (4) must be possible at ordinary room temperatures without the use of an incubator. The author believes that he has devised a method which fulfills these requirements. The test fluid and its action are described but the method of preparation is not indicated. It is a slightly cloudy, sterile fluid, which when kept dark and in a cool place, has remained effective for nine months. The serum to be tested is diluted ten times with normal salt solution. Of this 0.2 c.cm. are placed in one test-tube and 0.1 c.cm. in another. To the first is added 0.8 c.cm. and to the second 0.9 c.cm. of the diagnostic fluid. In a third test-tube is placed 1 c.cm. of fluid without the addition of any serum. The test-tubes are then stoppered, thoroughly shaken and set aside in a cool dark place for from ten to fourteen hours. When held against a dark background, the positive reaction is indicated by a clearing of the fluid, while the agglutinating materials have sunk to the bottom of the tube. The results attained have corresponded exactly with those secured with previous methods and in judging the presence or absence of typhoid fever, the same precautions must be observed. He claims that the method has been successfully used in several large German clinics. The preparation is at present made by Merck of Darmstadt.

Recent Literature on Diphtheria.—A review of the publications upon the subject of diphtheria during the past year reveals several interesting questions, for the solution of which considerable evidence is offered. C. B. Ker (Practitioner, Oct., 1903) quotes freely from a paper by Martan who believes that there is much less discrepancy between clinical and bacteriological results than is sometimes asserted and that this discrepancy is often due to errors on the part of the bacteriologist or physician. He holds that the diagnosis can be made clinically with a probability which amounts to almost

certainty and at least with sufficient accuracy to determine whether antitoxine is indicated or not. He does not appear to believe in a simple catarrhal diphtheria and when no membrane is present the question of diphtheria may be dropped. The relationship of true diphtheria to follicular tonsillitis is an interesting point and Marfan believes that certain true cases, especially when the larynx is involved first, do present the appearance of tonsillitis. In his wards 80 per cent. of the cases of follicular tonsillitis accompanied by laryngitis were diphtheritic, whereas under one-half per cent. of follicular cases with no laryngeal symptoms were found to be diphtheritic. Some of the causes of death are carefully studied by Babier and he urges the importance of cardiac thrombosis and tuberculosis. In 69 autopsies he found ante-mortem thrombi present in the heart in 37 or 52 per cent. In 19 cases in which bacteriological examinations were made the diphtheria bacillus was found in the clots in 18 instances. The patients usually die suddenly during convalescence. He also believes from numerous autopsy findings that diphtheria lights up old tuberculous processes. Perhaps the most useful contribution upon the subject of treatment is the suggestion by Cairns who has used the antitoxine by intravenous injection in the severe laryngeal and nasal forms. He recommends large doses, 20,000 to 30,000 units, in order that the large doses of toxine which have evidently overcome the system may be neutralized. If given subcutaneously the lymphatic glands seem to prevent the serum being absorbed rapidly enough to prove successful. The cases of bronchopneumonia complicating diphtheria are now recognized as being usually due to the Klebs-Löffler bacillus and the rapid absorption of toxin in these cases also can perhaps best be withstood by large intravenous injections.

A Classification of Leucemia.—It is now generally believed that all forms of leucemia must be looked upon as a hyperplastic tumor-formation in those organs which produce leucocytes. A lymphatic leucemia results where the cells without granules are chiefly involved and a myelogenous and lieno-myelogenous type where the granulated cells chiefly proliferate. The last class generally develops more slowly; in fact most cases of acute leucemia are lymphatic. It is probable that the cells of the lymph-nodes and spleen may become granulated so that theoretically participation of the bone-marrow is not absolutely necessary in the myelogenous form, though practically it almost always occurs. To properly understand the pathology of blood-diseases, F. P. Weber (Virchow's Archiv, Vol 174, No. 2) finds it convenient to divide them into the following classes: (*a*) Proliferation of lymphocytes in the bone-marrow, without migration of the cells into the circulating blood: Myelogenous pseudoleucemia, myelogenous lymphosarcoma, lymphadenomatosis ossium and multiple myeloma of lymphatic type; (*b*) like above, but with passing of the cells into the blood: myelogenous lymphocythemia, including some cases of acute lymphatic leucemia; (*c*) new formation of lymphocytic cells in the lymph-nodes and lymph-adenoid tissues in general, without migration into the blood: lymphatic or splenic lymphadenoma or pseudoleucemia. The chronic cases are characterized by the presence of more fibrous tissue. (*d*) Like above, but the cells enter the blood: lymphatic or splenic lymphocythemia. (*e*) Proliferation of cells on the type of medullary myelocytes, without migration: myelogenous pseudoleucemia. Some cases of multiple myeloma also belong here. This class is characterized by the presence of Bence-Jones' albumosuria. (*f*) Like above, with abundant cells in the blood: myelogenous or spleno-myelogenous leucemia. Occasionally the character of a leucemia changes from myelogenous to lymphatic without involvement of the lymph-nodes; in such cases the process has become more acute so that the medullary cells have not had time to develop granules. Why in one case the cells leave the organs, and in the other not, is not known but possibly the cells in the latter class have lost their power to wander or to continue their existence in the blood.

Relation of Leucemia to Tuberculosis.—A few cases have recently been reported in which these two diseases coexisted, but considering the frequency of tuberculosis the association of the two diseases is important more on account of its rarity than its frequency. W. J. Sussmann (Practitioner, Oct., 1903) was able to collect twenty-five instances in which there was little or no doubt of the presence of both diseases and he is able to show that it was usually the lymphatic form of leucemia which appeared, although, in general, the splenomedullary form is the more common. An interesting point upon which he dwells is that the two diseases probably exert an antagonistic influence over each other. The most striking difference between the two diseases is the presence of a marked mononuclear leucocytosis in leucemia and an absence of leucocytosis in tuberculosis. This leucocytosis must be inimical to tuberculosis by increasing the amount of nucleo-albumin present in the body and by increasing the phagocytic action of the blood. The myelocytes possess this latter characteristic to a greater degree than either of the other kinds of leucocytes and this is offered as a reason why splenomedullary leucemia is even much more rarely associated with tuberculosis than lymphatic leucemia is. This theory of the power of nucleo-albumins to inhibit the growth of tubercle bacilli has been made use of by the employment of nitrogen and nitrogenous products as the remedies *par excellence* for the tubercle bacilli. Urea has thus been used. The ferment-treatment has also been introduced, being administered as pure yeast. Pure yeast-cells are distinguished by the large amount of phosphorus which they contain and the nucleins, obtained from yeast cells, differ very little from those of animal cells. In leucemia this excess of nucleins is already present.

Diseases Simulating Typhoid Fever.—Many authors described various diseases which simulated typhoid very closely, and the meaningless term of paratyphus was proposed by some as a designation for this class of affections. D. D. Pletneff (Roussky Vrach, Oct. 18, 1903) reports two cases in which typhoid had to be excluded only by a bacteriological examination as clinically there were typical symptoms of the disease; an incubation period, fever of a remittent character and always high, enlarged spleen, prominent nervous symptoms and diarrhea. In neither of the cases could the Gruber-Widal reaction be obtained. The secretions contained the colon bacillus.

Endothelioma of the Pleura.—Endothelial cancer of the pleura has been described by many authors under various names such as pleuritis carcinosa, lymphangitis carcinomatodes, lymphangitis prolifera, etc. It was considered as an inflammatory process because the swelling took its growth principally from the local elements, whether found primarily or after it had generalized, and also because of its diffused character as well as the various clinical symptoms pointing distinctly to inflammation, which in its final stages brought about tissue alterations that produced the picture of a cancer. According to A. I. Bourtzeva (Roussky Vrach, Oct. 18, 25, 1903) all authors agree that it is the endothelial cells of the lymphatic vessels that give rise to the formation of the endothelial tumors of the pleura. The case which forms the basis of the author's investigation was that

of a man of forty-one years who was admitted to the hospital complaining of difficulty of breathing, cough and general debility. The dyspnea began about three years ago, and kept constantly increasing. He underwent evacuation of the pleural cavity three times during this period, but experienced only temporary relief therefrom. He presented marked cyanosis; the left side of the chest was considerably enlarged, the intercostal spaces smooth. Percussion elicited perfect dulness over both apices on either sides, the dulness also extending downward. The respiratory murmur was absent in a great part of either lung. The expectoration contained many bacteria, principally staphylococci; no tubercle bacilli. The pleura was tapped and 1,350 c.cm. of an opalescent fluid was extracted. Relief was obtained which lasted but a few days, the patient's condition grew gradually worse, and he finally died of what seemed to be paralysis of the heart. The autopsy showed the patient to have suffered from an endothelioma of the pleura, which owed its origin not only to the endothelial cells of the lymphatic vessels and spaces but also to the perithelium of the blood-vessels. The growth had also invaded the upper lobe of the adjacent lung, and some portions of the mediastinum.

Primary Malignant Intrathoracic Tumors. The clinical manifestations may be divided into those of centripetal and those of centrifugal extension, according to T. N. KELYNACK (Med. Press and Circ., Nov. 4, 1903). The general evidences of these growths when their development is rapid, may be marked. The distinct cancerous cachexia is, however, not usually pronounced. Clubbing of the finger ends is occasionally a prominent factor. Under certain conditions of extremely rapid growth, however, a carcinoma may run a course very similar to that of acute lobar pneumonia. Dyspnea occurs usually very early and may be the only symptom. It may be persistent, or paroxysmal; it may or may not be varied by posture and may be inspiratory or expiratory; it may be perceptible only upon exertion. Orthopnea develops in a large part of the cases. Cough due to pressure is a very early symptom. It is apt to be very characteristic and may accompany alterations of voice. Hemoptysis, when present, is an important symptom. The sputa examination, however, does not usually give any help. Cyanosis is often marked. The nervous derangements due to the involvement of the sympathetic central nerve symptoms by pressure are manifold. Prominent among these is the contraction of the pupil, which may be accompanied by ptosis. Occasionally the brachial plexus may be involved. The lesion must be differentiated from abscess and syphilis, from bronchitis from peraphetic and pericardiac conditions and from aneurism.

Radium in Medicine Hardly has the medical profession recovered from its surprise at the wonderful results obtained by the application of X-rays to medicine when another even more potent remedy is placed before us by the discovery of radium. The beneficial results to be expected from X rays, together with the limitations of its use, are now being thoroughly worked out and recognized by its extended and varied application to numerous pathological conditions. Although the phenomenal results at first hoped for the X-rays have not been entirely realized, yet this agent has fully proven its claim as a useful and potent remedy in the treatment of many diseased conditions. The price of this new substance, $2,700,000 a pound, prevents its very extended use in medicine at the present time, but the price will undoubtedly be diminished when better methods of separation have been found. Its wonderful activity in emanating heat and light rays is not accompanied by any discoverable loss of weight or diminution in energy and hence the principle of the conservation of energy seems to have met a stumbling block when applied to the properties of this metal. S. G. TRACY (N. Y. Med. Jour., Oct. 24, 1903) shows how active radium is when brought in contact with living cells and germs. A small piece carried in the pocket for a few hours will cause a severe burn resembling closely that from prolonged exposure to the X-rays. It is powerful in killing cultures of bacteria, even when exposed for a short time. Radium salts when brought near to the temples or closed eyes cause sensations of light. Patients blind for years have been made to see slightly. Very good results have been reported from the use of the salts of radium in cases of rodent ulcer, superficial cancer, various kinds of skin disease and optic atrophy. In the treatment of tuberculosis of the lungs Soddy suggests that radium be dissolved in water. He says "that instantly all its emanations are evolved in gas and mixed with the air above the solution. These emanations can be stored in a gas holder and one-half the emanations will disappear every four days till at the end of three weeks all will be gone. The solution containing the radium will be found to be just as active as at the beginning and seems to have regained its potency during the three weeks." Inhalations of these emanations leave a thin film of radioactive substance in the lungs which exerts a germicidal power over diseased tissue long after the emanations have been exhaled. Experience has not yet taught us how much to expect from this method of treatment.

Diet of Bread and Fruit and Its Effects Upon High Blood-pressure, Dropsy and Obesity.—It has been found that a healthy person weighing about 140 pounds will require to eat 28 ounces of foodstuffs a day and of this 21 ounces may be taken as breadstuffs and 7 ounces as dried fruits. A. HAIG (Med. Rec., Oct. 31, 1903) shows what an elaborate and savory meal can be gotten up from breadstuffs, fruits and vegetables while, on the other hand, a more simple and easily obtained meal could hardly be desired. There is no doubt but what a large number of the chronic ailments which we are called upon to relieve are due to overeating, especially when a proteid diet is freely indulged in. The chief advantage of bread and fruit diet is seen in the collemic and high blood-pressure group of uric acid food poisonings. Such used to be called diseases and were reckoned under the names of headache, epilepsy, neuralgia, asthma, Bright's disease, dropsy and obesity. The great point in the relief of these troubles is the lowering of the blood pressure. By cutting down the fluids as much as possible and feeding on breadstuffs and fruit, a blood pressure of 150 to 160 mm. of mercury can be reduced in a week or two to 120 mm. of mercury with a correspondingly large improvement in all the forms of food poisoning. The washing-out plan of treatment by giving large quantities of water to drink usually fails, for it does not increase the elimination of uric acid and furthermore maintains the high blood pressure which is an important causative factor in the conditions. In many of these high blood pressure troubles much good may also be done by temporary but complete abstention from both food and fluid, as this will produce in twelve to twenty-four hours, a fall of from 20 to 40 mm. of mercury in the blood pressure.

Alimentary Glycosuria in Children of Diabetic Persons.—Heredity undoubtedly is an important factor in the causation of diabetes which seldom develops suddenly or rapidly in a perfectly healthy individual. Since its symptoms do not usually appear until the disease has advanced to some degree, it is only by some chance such as an insurance examination that the cases are discovered in their early stages. A. LORAND (Practitioner, Oct., 1903) has carefully examined ten

cases of children or young adults, one of whose parents, at least, has a well-developed diabetes mellitus. It was found that although several of them showed no traces of sugar in the urine on a restricted diet they all showed distinct glycosuria when given a test meal containing from 250 to 300 grams of carbohydrates. Care was taken to eliminate the possibility of this glycosuria being due to the ingestion of any drugs. He believes that the majority of children of diabetic parents have inherited a certain defective power of dealing with sugar in their economy, and if this fact was known early in life their lives might be greatly prolonged by a careful regulation of their diet. He has also noticed in such persons the presence of acne vulgaris not only in the years of puberty, but also in full grown-up adults. Obesity was also frequent among them and according to v. Noorden this is a symptom of diabetic predisposition. This does not mean that all people showing these predisposing signs will have true diabetes, but if addicted for a long time to an irrational nourishment (containing an abundance of meat and sweet, amylaceous food), or if subjected to great psychical emotions they are much more liable than the ordinary individual to develop diabetes and the younger they are when this appears the more serious will be the prognosis.

SURGERY.

Some Peculiarities of Temperature in Appendicitis.—Several authors pointed out some time ago the great divergence of temperature in appendicitis between that taken per rectum and the axilla, the difference ranging between 1° to 2.9°, while in severe cases an increased frequency of the pulse was observed with a fall in the temperature. M. I. Rostovtzeff (Roussky Vrach, Oct. 4, 1903) noted a maximum rise of temperature in light cases (namely, those that recovered without surgical interference), between four and six o'clock in the evening, while in a smaller number of these cases the maximum rise occurred at 9 to 10 P.M. On the other hand, in the more severe, operative cases, the highest rise in the temperature was noted at between nine and ten o'clock in the evening; the same rise was observed in the very severe, fatal cases. The author desires the above data to be considered as important, in conjunction with other symptoms, in the diagnosis as well as the prognosis of the case. He advises frequent temperature taking particularly toward evening, and in case of a rise between nine and ten o'clock in the evening our watchfulness should be redoubled.

Malignant Diseases of the Larynx.—Abernethy said: "Every operation which mutilates is a black spot on surgery." Thermistokles Glück (Med. Jour., Oct. 31, 1903), said that in operating upon the larynx, our first object must be to save life, our next to leave the patient in such a physical condition that the life thus saved was worth living. For some of the cases of syphilis and circumscribed cancer of the cords, the steps recommended are as follows: (1) A low tracheotomy is done; (2) a median incision is made through the skin and fascia, the sternal muscles are retracted and the larynx is exposed; (3) the thyroid cartilage and cricothyroid membranes are divided in the middle line and the two halves retracted with hooks; (4) a solution of cocaine and antipyrene five per cent. and carbolic one per cent. in water is applied to the anterior of the larynx and the growth is removed with scissors, knife or thermocautery, and plugs of iodoform gauze are placed in the larynx and fixed with a few points of sutures through the cartilage. (5) Between the fourth and sixth days the plugs are removed under anesthesia. In three weeks healing is completed and the patient is allowed to speak. The operator has patients who were operated upon fourteen years ago who are still able to lecture regularly.

Appendicular Toxic Nephritis.—This condition, although too little known, expresses itself by one constant sign—albuminuria. Prof. Dieulafoy (Med. Press, Nov. 4, 1903) regards this lesion as one of extreme importance. The nephritis often escapes observation owing to the absence of obvious symptoms, more particularly in the event of the albumin being present in but moderate excess and where that most graphic symptom, the swelling in the region of the eyes is absent. In these cases the urine should be watched very carefully for granular casts, and if they are discovered, the prognosis is rendered much more grave. Albuminuria in itself does not always justify us in giving an unfavorable prognosis, but it is nevertheless one of the signs of impending toxemia and should be regarded as an important danger signal. This is not due to the nephritis alone, which in some cases may lead to anuria and to general intoxication of the organism. It is interesting to note the possibility that the nephritis due to appendicular toxins may be a factor in the etiology of chronic nephritis, or, indeed, spreading further, it may in cases of chronic appendicitis be a prominent factor in the etiology of general cirrhosis.

Treatment of Fractured Mandible.—So many methods have been devised in the interest of this frequent fracture as to show that the ideal has not yet been reached. Stewart L. McCurdy (Ann. of Surgery, Nov., 1903) drills from the external surface into the sublingual cavity. The drill holes should be made between the apices of the second and third teeth in the line of fracture if possible, so as to guarantee firm anchorage. On being made they are threaded with a notched drill and the wire passed through from without into the mouth on one side. The free ends are twisted on the outer surface of the bone so as to bring the margins in perfect apposition. Iron wire is always used, being tougher, less irritating and in every way superior to silver wire. These patients soon learn to hold their teeth together, and the wire, without any other dressing, is left in for about six weeks. The question of feeding this class of patients is one of some concern. Where no teeth are absent, it has been customary to pass a glass tube back of the last teeth. If the curve is sufficiently marked, nutrition can be more readily maintained by the increased ability of the patient to close the lips and suck up fluids.

Prostatic Hypertrophy.—The rôle played by the enlarged prostate from its earliest symptoms until death closes the scene is purely mechanical. George W. Hawley (Ann. of Surg., Nov., 1903) concludes from the analysis of the problem of prostatic hypertrophy (1) that it is not the prostate, but the adjacent urinary tract which demands treatment; (2) that the direct cause of the interference with the urinary evacuation is the displacement of the outlet of the bladder resulting from enlargement of the retrourethral portion of the prostate; (3) that until the precise cause of prostatic overgrowth is known and successful preventive measures employed, one can only hope to relieve this condition by correcting the displacement; (4) that until an effectual method is devised, which is sufficiently safe and simple for application, before infection and disorganism of the urethral tract has resulted, surgery cannot bring any great relief; (5) that the logical mode of correcting vesico-urethral displacement by reduction is evinced by the fact that operative methods improve urinary evacuation by virtue of their power to reduce this displacement; (6) that while some of the methods partially, sometimes completely, accomplish reduction with comparative safety, and others entirely reduce it, but at con-

siderable risk, none does so with both safety and success; (7) that since the reduction of the vesico-urethral elevation is essentially a mechanical problem, reduction based on anatomical and mechanical processes should prove the simplest and safest. No method can be successful which does not permit of complete reduction for all degrees of elevation. The operations of Dr. E. W. Andrews and H. Delageniere are based upon correct principles, but do not go far enough. The author describes in detail a more complete technic for the downward reduction without injury to the bladder and urethra.

Renal Calculus Simulating Sciatica.—It is important that every person who is a chronic sufferer of malaria and who gives a history of having had it for a number of years, particularly if the patient be young, should be examined for possible renal calculus. H. E. BRUCE PORTER (Lancet, Oct. 17, 1903) records an interesting case in which a prominent practitioner had been misled into believing the case one of idiopathic sciatica, and had subjected the patient to the annoyance and futility of a three years' stay at Carlsbad. This patient became pregnant at the age of thirty-one years and during the whole period suffered intensely from a pain in the right side. The hands swelled so much that she could not wear her rings. She was given to understand that this was due to her pregnancy, and her urine was not examined. At the time of examination, four years after the birth of the child, the urine was loaded with pus, about three drams in twenty-four hours. It was free from tubercle. Sir Frederick Treves operated on the patient, and upon the removal of the kidney it was found to be nothing more than a mere shell containing at least 15 ounces of pus.

Upward Dislocation of the Foot.—The literature of this subject is extremely sparse. The salient features of the condition are that the astragalus, retaining its normal relations with the foot, is driven upward between the tibia and fibula without fracture of either bone. PERCY W. G. SARGENT (Lancet, Oct. 17, 1903) cites a case from St. Thomas' Hospital. Reduction was accomplished under an anesthetic by simple traction on the foot. This dislocation is one of the most remarkable, because of the enormous strength of the ligaments uniting the parts. On the cadaver the dislocation could not be imitated until not only the interosseous, but the internal and external ligaments of the ankle had been divided. This seems to show that this accident had taken place in the case cited, although the recovery was complete. The more important clinical notes on this case are (1) the increase of the intermalleolar measurement; (2) the prominence of the heel; (3) the approximation of the maleoli to the plane of the sole; (4) the absence of fracture; (5) that the injury was not compound; (6) the extreme ease with which reduction was effected.

Splenectomy for Banti's Disease.—Osler describes this symptom complex as "a chronic affection, probably an intoxication of unknown origin, characterized by a progressive enlargement of the spleen, which cannot be correlated with any known cause, a marked tendency to hemorrhage, particularly from the stomach, and in many cases a terminal stage of cirrhosis of the liver, jaundice and ascites." C. H. LEVISON (Ann. of Surg., Nov., 1903) relates the interesting history of a case occurring in a young man upon whom he had previously operated for appendicitis and whom, after the development of the characteristic symptoms of Banti's disease, he was able to follow technically for eight months. The blood findings characteristic of Banti's disease are (1) oligocythemia, the average number of red cells being 3,500,000; (2) oligochromia, the low percentage of hemoglobin is fairly constant and is marked by a low color index. In pernicious anemia the contrary obtains. (3) leucopenia. This is quite constant. The leucocyte count is usually much under 5,000. The red cells in the differential count are of no value. Levison's summary of his case is as follows: First, that the disease was preceded by an infectious appendicitis. Second, that there were intervals of perfect health interrupted by profuse bleedings. Third, the exacerbations of temperature of the leucocytosis both indicative of some form of infection. Fourth, slate colored stools and diarrhea, evidences of a digestive disturbance. Fifth, severe pains between the shoulder blades, enormous quantities of morphine necessary for its relief. Sixth, the spontaneous disappearance of the ascites after a single paracentesis. Seventh, the splenectomy followed by the rapid increase in percentage of hemoglobin. Eighth, the appearance of normoblasts and megaloblasts in the blood subsequent to the splenectomy. Ninth, the rapid regeneration of a very abnormal blood. Tenth, the disappearance of the melanoderma. Eleventh, thrombosis of the veins of the neck. The author concludes that Banti's disease offers a favorable prognosis if operated upon early, death resulting if it be allowed to pass unoperated.

Hallux Valgus.—Tight-fitting or narrow-toed shoes are probably only a small factor in the causation of this condition. It seems to occur in people whose feet are of one type: Arch of the foot well formed, the extensor tendons of the great toes prominent at the metatarsophalangeal joints, the first phalanx of the toes extended and the distal phalanx flexed. J. G. SHELDON (Med. Rec., Oct. 24, 1903) believes that the tendon of the extensor proprius hallucis muscle by its insertion tends to abduct the big toe, and that as soon as the abduction begins this muscle acts with greater force. This muscle is always strong and is found tense in cases of hallux valgus. The operation which is recommended for this condition is the modified Dawbarn operation. The joint is exposed by making a flap, the convexity being upward and outward. Instead of resecting the whole head of the metatarsal bone, the inner one-half or two-thirds of the head is removed by bone forceps, the outer part of the head being undisturbed. The extensor tendons of the big toe are then split and divided so as to allow a lengthening of from an inch to an inch and a half. The advantages of the operation are that a movable joint is obtained without shortening of the toe, while lengthening of the tendons prevents recurrence of the deformity.

Modified Operation for Inguinal Hernia.—In doing a radical operation for hernia it is almost universally admitted that the separation of the hernial sac is the most difficult part of the operation, and the trauma which is often caused may result in unpleasant consequences. S. PETRULIS (Archiv f. klin. Chirurg., Vol. 71, No. 4) advocates the method first proposed by Kasumowsky in which the sac is left in place. The operation was done in twenty-one cases without recurrences, and consists in the main of a resection of the hernial sac at its neck, after the latter has been sufficiently separated from the cord, and a closure of the opening in the usual manner. In two cases there was a subsequent accumulation of fluid in the sac after the eleventh day, but this disappeared in about two weeks without any complications.

Effect of the X-rays on Epithelial Tissues.—An investigation relating to the penetrating power and the effect on normal tissues of the Roentgen rays has lately been made by G. PERTHES (Archiv f. klin. Chir., Vol. 71, No. 4). Among other things he was able to show by microscopical examination that the action of the X-rays was much more intense on the epithelial cells

than on the adjoining connective tissue. It must be assumed, however, that the carcinoma cells are altered to a greater extent than those of the normal epidermis, for in this way alone can the rapid proliferation of normal epithelium be explained which covers over the small defects resulting from the disintegration of carcinomatous nodules. The author also claims that the rays possess greater penetrating properties than have hitherto been attributed to them. In two cases of inoperable mammary cancer, degenerative changes could be detected in the deeper layers of the growth after exposure to the rays. In a number of other instances warts were covered with skin from corpses and exposed, with the result that in every case the wart disappeared. Another series of experiments was concerned with the effect of the rays on active growth. It was found that when newly hatched chicks were exposed to the rays, their growth was markedly inhibited. On the side exposed the development of the feathers and the growth of the long wing bones was appreciably inhibited when compared with the other side. It seems that the rays in this case are not intense enough to kill the cells, but merely inhibit growth. Whether this is due to direct action on the cells or is produced by the intermedium of chemical products, still remains an unsolved problem.

Question of Early Operation in Appendicitis.—An interesting contribution to this widely discussed subject is made by Prof. E. Payr (Archiv f. klin. Chir., Vol. 71, No. 4), in which he gives due credit to American efforts in this particular branch of surgery. From a careful study of the subject, and the result of his own experience, he finds that the statistics of the so-called early operation for appendicitis are based on widely varying collections of material, and cannot, therefore, furnish conclusions which are applicable in all cases. An increasing number of surgeons acknowledge the necessity of early operation in that class of cases where the appendix is directed in a medial direction from the cecum, and thus affords a readier means for the spread of an inflammatory process. The author believes that it is important to develop this point in topographical diagnosis, and to bring into proper relation the clinical picture with the pathological changes. He concludes that if the appendix has been removed before perforation or abscess formation has taken place, the operation cannot be designated as an "early" one, but should be considered as having been undertaken in the nick of time. If the operation is done after perforation occurs, the chances of recovery may be compared to those in perforating gastric ulcer or a ruptured gall-bladder.

Case of Duodenojejunal Hernia.—A very novel pathological condition, which has hitherto been apparently unnoticed in the literature, is described by A. Narath (Archiv f. klin. Chirurg., Vol. 71, No. 4). A laparotomy was undertaken in a young woman in whom the clinical diagnosis of tumor of the pyloris or gall-bladder had been made. Exploration showed the presence of an old ulcer of the stomach followed by pyloric stenosis, hour-glass contraction of the stomach, and also a very peculiar displacement of the entire small intestine. The latter did not occupy its usual position below the transverse colon, but ascended upward back of the stomach, perforated the lesser omentum and then descended in front of the stomach, the transverse colon and the greater omentum down to the lower part of the abdominal cavity and the pelvis. The colon was normally placed and fixed, and only the cecum was displaced toward the center and upward. When the small intestine was reflected upward, the lower section of the ileum could be detected coming through an opening in the median line at the root of the transverse mesocolon. The entire small gut could be readily pulled through this opening and replaced in its normal position. The author explains this extraordinary condition by assuming that originally there was present a retroperitoneal hernia, the sac of which ruptured upward and back of the stomach, forming a true left-sided hernia of Treitz. The hour-glass contraction of the stomach may be explained by the action of the loops of gut which surrounded the organ in a circular manner and the author also calls attention to this condition as an etiological factor in the production of hour-glass contraction. Operation in the case in question consisted in replacing the abnormally situated gut and sewing up the opening through which the gut had found its way. The pyloric stenosis was treated by doing the usual form of pyloroplasty and the patient made a good recovery.

Foreign Bodies in the Male Bladder.—As is well known, no pathognomonic symptoms exist whereby to determine the existence of this condition. Exact diagnosis is possible only by objective methods. Occasionally the diagnosis is easy—when, for example, the physician has had the misfortune to break off an instrument in the bladder during manipulations, but as a rule, conditions render a diagnosis on subjective data very questionable. Maximilian Hirsch (Deut. Zeitsch. f. Chir., Sept. 1903) outlines the following directions for examination: (1) Palpation, under anesthesia bimanual through rectum. Perfected by v. Volkmann, but useless if the prostate be enlarged; (2) sounding has a wider field. By this method much can be learned, not alone as to the existence of a foreign body in the bladder, but yields information as to the number, size, shape, consistence, position and motility; the presence or absence of incrustation or pocketing; (3) lithotrite, an excellent idea of the consistency of the foreign body may be had from the use of this instrument and very often particles come away attached to the blades. (4) cystoscope. This instrument enables position, orientation and identification of the body, as well as the condition of the bladder wall, as to inflammation, bands, etc. (5) X-rays. These are particularly useful in cases, particularly of extreme stricture of the urethra. Unfortunately this method is useful in those cases only where the foreign body is of such a nature as to cast a shadow. The therapy of this emergency depends entirely on full diagnosis of existing conditions. There are two methods of choice: The wet and the dry. The history of these for the past fifty years is interesting. After the introduction of the lithotrite the percentage of removals via the urethra rose from 27 per cent. to 82 per cent. With the advent of aseptic technic it has returned to 27 per cent. The choice of the dry methods is determined (1) by the relation of the sizes of the body and the urethral orifice to each other; (2) the body must be freely movable; (3) it must be free from sharp sides or points; (4) it must not be too brittle; (5) the urethra must be free from extensive stricture; (6) extensive cystitis contra-indicates; (7) if iron, a magnet may be used. The wet method, either by the supra- or infrapubic route is indicated (1) when the dry fails (2) in all other conditions, except those cited above. It should be remembered that the infrapubic route does not open the bladder proper, being virtually an external urethrotomy. Hence the suprapubic path is usually preferred.

Treatment of Traumatic Hemorrhage of the Spleen.—The difficulties attending the treatment of this condition are commented on by N. Senn (Jour. Am. Med. Ass'n., Nov. 21, 1903), who proposes a method which he has successfully experimented with in dogs. In a number of these animals clean-cut, incised wounds

of the spleen were made, calculated to give rise to a maximum amount of hemorrhage. The edges of the wound were then seized with broad forci-pressure forceps, which were very slowly closed. This action displaced the splenic pulp from the loose net work of connective tissue, which, in turn, is condensed into a broad, firm band in which the larger blood-vessels become entangled. The forceps may be left in place for several minutes and then the crushed margins of the wound are sutured together with catgut. In all cases (7) subsequent autopsies showed that the wounds had healed with good results, and that very few adhesions were present. Based on the results of these animal experiments he regards this as the most favorable procedure yet devised.

Resection of the Intestine.—A series of nine cases is reported by G. T. Vaughan (Am. Med., Nov. 21, 1903) with five recoveries and four deaths. Five were done for strangulated hernia with three recoveries and two deaths, and four for tumor of the colon, with two recoveries and two deaths. The methods were by the Murphy button, five with three deaths; and suture three, all recoveries. In one case the ends of the intestine were left ununited. The button was used in the worst cases, while the suture was used only in the most favorable cases. The high mortality (44 per cent.) is accounted for by the severity of the cases operated upon.

Thrombosis of the Femoral Veins and Laparotomy.—The majority of the writers on this subject consider that infection is the most probable cause, says E. R. Secord (Am. Gyn., Oct., 1903), though, as Willy Meyer puts it, the infection need not start from the operation field, but may originate elsewhere especially in the intestinal tract. In a large percentage of the cases, however, neither wound infection nor inflammatory disturbance in other parts of the body can enter into the discussion, since nearly all the wounds followed a typically aseptic course, and in many at least there was no evidence that there were infective lesions elsewhere. The elevated temperature is not in itself an evidence of an infective origin (Meyer). All writers on this complication have emphasized its late occurrence. Nothing new can be offered regarding the treatment of this state when it arises. Elevation of the limb and moist heat to favor the formation of the necessary collateral circulation seems best to meet the indications. Lennander's suggestions as to prophylaxis by elevation of the foot of the bed would seem difficult to carry out. Moreover, it would surely make 999 patients uncomfortable in order that one might have the chance of escaping this complication. Again, Van Buren Knott reports 326 cases of laparotomy treated postoperatively by elevation of the head of the bed (Fowler's position), without any increased tendency to phlebitis. It would seem advisable to support the abdomen more securely, especially after removal of large tumors, than is now the general practice. After hernia operations it would appear best to exercise a certain degree of direct pressure over the wound area, probably best carried out by a well-applied spica of crinoline. No single etiological factor is alone responsible for the occurrence of this complication. The rôle of infection in otherwise non-infected cases does not seem to be an important one. Conditions of sudden decrease of pressure independent of the operation probably exert a causative influence. Treatment should be prophylactic by avoiding all unnecessary traumatism, hemorrhage or a sudden decrease of tension, by having the wound area well supported by firmly applied bandages. So far as the author is aware, there has been no mortality in the reported cases, but the occurrence of pulmonary embolism in a certain proportion of cases warns us that this termination is not an impossible one.

Intussusception in Children.—Much has been said regarding the difficulties of diagnosing this condition, and it is altogether likely that, in some cases, especially in the enteric variety, this is true. But in three cases reported by R. E. Skeel (Am. Gyn., Oct., 1903) the diagnosis was at all times easy to make, was entirely typical; there were paroxysmal, colicky pains of great severity, prostration, vomiting, tenesmus, and bloody stools in all. In addition, the abdomen was soft and could be palpated with ease, so long as the child did not cry. A tumor could be found in the same locality in each of them, but was frequently elusive in that it could be distinctly made out and the next moment would escape entirely from the grasp, only to be found again after a somewhat prolonged search. An extremely severe attack of colitis was the only other condition that could be confounded with it, but the soft, flat abdomen would have been sufficient to have at once put one on his guard. The positive evidence afforded by the presence of a sausage-shaped tumor was, of course, of great value in arriving at a diagnosis, but it was merely confirmatory. It is an open question whether cases reduced by mechanical measures would not have reduced themselves, but these methods are of value in classifying cases at the earliest possible moment, and indicating the necessity for surgical intervention in those which fail to yield to such measures. All arrangements should be made and consent gained before the operation, and a fair trial of air or water should be given. If they fail to cause complete disappearance of the tumor, no time should be lost, for the earlier the operation the more effectual will be its results. Repeated attempts at mechanical reduction are not only useless, but dangerous, and give more time for swelling an edema of the intussusception and for adhesions to occur, and perforation and peritonitis to take place, and this loss of time might convert a simple into prolonged and complicated operation, ending in death.

Surgery of the Ileocecal Valve.—The fact is well established that the pyloric and rectal valves are liable to inflammatory disease, with consequent hypertrophy and contraction of the tissues and attendant partial obstruction of the tract. N. Stone Scott (Am. Jour. of Obstet., Nov., 1903) thinks that it would be most natural to suspect the other one of the three, the ileocecal valve of similar tendencies. Again the pyloric end of the stomach is rich with glandular structures, and it is in this part of the stomach that we find gastric ulcers with the resulting cicatricial contractions and stenoses. So of all parts of the intestine there are more glands at the ileocecal valve. Both in typhoid and tuberculosis there are to be found more ulcerations than elsewhere. The medical history of the subject is remarkable for its silence. Legg reports but six cases of non-malignant stenosis of this portion of the intestinal tract. Schröder showed two cases at autopsy and Sayo reports but two others. The symptoms and signs of a contracted ileocecal valve are quite obscure, there being no pathognomonic symptoms, but merely a combination of those noted for appendicitis and obstruction of the intestine proper. A chronic ileocecal obstruction will more likely be mistaken for a chronic appendicitis than for chronic obstruction. The following are a few of the more important signs and symptoms: Periodical pains at McBurney's point, with thickening of the tissues, sometimes to such an extent as to form a good-sized tumor. Tenderness of the same point sometimes accompanied with rigidity of the abdominal muscles. Pain in the stomach, acid or gaseous eructions, and other dyspeptic symptoms. Disturbances of the bowels,

usually constipation, or diarrhea, followed by constipation. Evidences of distention of the lower end of the ileum, the presence of which is best evidenced by the hard tumor in the iliac fossa, which comes and goes, usually accompanied by colic-like pains, sometimes disappearing with gurgling sounds. Not all these symptoms are present in every case; in fact, the larger majority of them may be absent, thus leading to greater obscurity. The etiology of the cases is usually either hyperplastic valvitis or ulceration, the result of typhoid or other disease. Since the ileocecal contraction sometimes appears coincident with the more common chronic appendicitis, and especially as many of the symptoms are identical, it is right that the surgeon should examine the valve while operating for appendicitis. Non-malignant obstruction of the ileocecal valve, though not more prevalent than heretofore, will be far more frequently recognized, and therefore rectified, in the future than in the past.

Intra-abdominal Rupture of the Urinary Bladder.—In concluding his very elaborate article on this subject J. B. Zeldovich (Roussky Vrach, Oct. 18, 1903) reports the case of a woman who was kicked in the abdomen and suffered at once from severe pain, incessant vomiting and retention of urine. The condition of the patient when conveyed to the hospital was that of a severe shock, with a subnormal temperature, rapid, small pulse, dry tongue, inflated and painful abdomen. As the urine drawn by the catheter did not contain any blood a diagnosis of a traumatic peritonitis was made, but which abdominal organ was injured could not be definitely settled before the operation. Laparotomy decided the diagnosis; the injured organ was the ruptured urinary bladder. This was sewed up, and a comparatively uneventful recovery followed. The author embraced the opportunity of giving a very interesting historical review of the subject, which will undoubtedly be very instructive to the specialist, but which does not admit of abstraction.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Inflammatory Foci in Bone.—By injecting the vascular system of the various bones with a mass made up of mercury triturated with oil of turpentine, E. Lexer (Archiv f. Chir., Vol. 70, No. 1) was able to secure Roentgen-ray pictures which clearly showed the course of the vessels and also the presence of the site of different infectious emboli. It was found that tuberculous foci in most cases are the result of infectious emboli or small masses of bacteria. Their favorite site is in the epiphysis or metaphysis of the long bones, although foci in the diaphysis may also arise from emboli which find their way through the nutrient artery. The connection between a trauma and a tubercular focus may be explained by a scattering of an old bone focus, although there is a possibility that a tubercular embolus or mass of bacilli may be accidently deposited at the site of the injury to the bone. Pyogenic foci are likewise of embolic origin, at least in part. The prevalence of staphylococci as causes of a purulent osteomyelitis may be explained by their tendency to be propagated in small masses. In this way a true bacterial embolus may be formed at the point where a single coccus is deposited, especially in the minute capillaries in the region of the zone of growth in the long bones. In both cases the greater vascularity of the bones of young persons plays an important role in determining the presence of inflammatory lesions.

Mortality Due to Congenital Malformations.—An attempt at an analysis by modern statistical methods, of certain biological aspects of the death-rate in man due to congenital malformations, has been made by R. Pearl (Medicine, Nov., 1903). He bases his studies on the mortality returns in the last United States census, and the specific problem investigated may be stated in the form of a question as follows: Is there any evidence that, with respect to all abnormalities sufficiently great to cause the death of the individual possessing them, one sex is more variable than the other? An analysis of these figures shows that the mean age of death from fatal congenital malformations of the sorts included in the census returns, is essentially the same in man and woman. Hence it may be safely concluded that the mean intensity or degree of the malformations is not essentially greater in one sex than in the other. The variation in the age at death from such malformations, as measured by the standard deviation and the coefficient of variation, is significantly greater in women than in men, and hence we may conclude that in intensity or degree of the malformations woman is more variable than man. These figures apply, of course, only to the United States returns, and may not hold among other peoples, and it would, therefore, be impossible to formulate any general rule, and it is necessary to study each particular species living in a certain environment. The author also calls attention to the fact that the mortality from congenital malformations discussed in this paper forms an excellent example of the action on the human race at the present time of natural selection "by the elimination of unfavorable variations."

Amitotic Cell Division.—Formally it was believed that amitotic cell division was restricted to the lower animals, but recently numerous observations have been recorded where direct cell division was found in both normal and pathological conditions in the higher vertebrates and man. R. Caminiti (Virchow's Archiv, Vol. 174, No. 1) found almost all the cells in a rare solitary adenoma of the liver multiplying by the direct process. The cells resulting from amitosis are probably equally as resistant as those generated by karyokinetic division, and it is wrong to suppose that they are only found in degenerative processes. The factors which determine the kind of division are yet unknown. Instances of karokinesis in the avertebrates, where amitosis is the rule, are also common.

Amyloid Tumors.—The first instance of amyloid tumor of the lung is reported by G. Herxheimer (Virchow's Archiv, Vol. 174, No. 1). The patient was an old man who had long suffered from hoarseness, and rather suddenly developed an empyema of obscure etiology. At autopsy one lung was studded with numerous small foci of greenish-yellow, hyaline appearance. The empyema probably resulted from suppuration of one of these tumors. The larynx was so altered by a similar pathological tissue that the true and false vocal cords were entirely destroyed. Microscopic examination revealed an alveolar connective tissue in the meshes of which a structureless tissue was imbedded, which gave a distinct amyloid reaction. Amyloid degeneration always begins in the media of the arteries; in many cachectic conditions it occurs as a general lesion, but local tumors are exceedingly rare. Sometimes part or the entire organ is involved, or syphilitic scars, malignant tumors and abscesses show amyloid foci, but real tumors have only been described in the bladder, conjunctiva and upper respiratory passages. They are always covered by normal mucous membrane, and at the periphery the lumen, adventitia and intima of the vessels are often apparent. The pathogenesis of these tumors is still unsettled; some look upon them as a result of a syphilitic inflammation, while others believe there is first a connective tissue new growth, which secondarily undergoes amyloid degeneration. In the author's case syphilis was de-

nied. The amyloid substance probably results from an exudation into the interstices of the connective tissue; it consists chiefly of proteid matter and chondroitin sulphuric acid, so that it may possibly be derived from the elastic fibers of the organs. The author found these fibers well preserved, but pushed apart in the peripheral parts, but in the older portion they gradually disappeared. In conclusion a new selective stain is described. The sections are placed into a concentrated solution of ponceau in alcohol, sodium hydrate and water for half to several hours, then washed in 70-per-cent. alcohol and stained with hematoxylin. The amyloid will appear pale or dark red, the nuclei blue and fat more yellowish-red.

Thyroid Gland in Smallpox.—The lesions of the thyroid gland in smallpox do not differ from those found in other acute infectious diseases, according to H. ROGER and M. GARNIER (Virchow's Archiv, Vol. 174, No. 1). They are characterized by an increase in colloid secretion so that the vesicular arrangement is absent, and the proliferating cells are placed closely together without order. Hemorrhages within the parenchyma are not infrequent. With exception of the latter the changes are purely functional and it is a peculiarity of the thyroid gland that functional disturbance gives rise to altered histological appearance. In severe cases the hypersecretion may be followed by an exhaustion of the gland, so that little colloid is present. When the patients survive the acute infectious disease, this exhaustion may explain subsequent thyroid disease as yet of doubtful origin.

New Method of Preserving Specimens.—By placing anatomical specimens into a supersaturated solution of ammonium sulphate and then passing illuminating gas through the fluid, M. CLAUDIUS (Virchow's Archiv, Vol. 174, No. 1) could preserve the natural colors more perfectly than with other methods. The gas converts the hemoglobin into the carbon monoxide compound and the salt preserves this and fixes the specimen by coagulating the albumin. It is necessary to preserve the organs in an airtight jar since the air will again break up the compound and give rise to a more brownish discoloration. All shades between red and brown can be obtained by regulating the amount of air. Bile pigment is also preserved and the normal consistence is retained. If animal specimens are to be preserved, it is simply necessary to kill the animal with illuminating gas and then place the organs into the salt solution.

Heat and Local Irritants.—In attempting to account for the beneficial action of both these agents, a series of practical experiments have been made by K. WESSELY (Archiv f. klin. Med., Vol. 71, No. 2). His point of view is based on the assumption that the antibodies in the blood serum have an important action in the beneficial effects produced by an hyperemia. This required an answer to the question as to whether the antibodies of the blood serum entered the tissues from the vessels in greater quantities during the production of a hyperemia. His experiments were conducted on the eyes of rabbits. After carefully shaving the eyelids, applications of hot water were made, the temperature of which was gradually increased from 50° to 60° C. It was found that the albumin content of the aqueous humor was increased from about $^1/_{10}$ per cent. in the normal condition, to $^3/_{10}$ and even $^1/_2$ per cent. As the hyperemia of the vessels in the ciliary bodies resulted in this increased transudation of serum albumin, it is natural to suppose that the total quantity of antibodies was also increased. This was also experimentally proved—a rabbit was treated with subcutaneous injections of dog's blood. The humor from a normal eye had no effect whatever in dissolving the corpuscles from a dog's blood, but that taken from an eye which had been subjected to warm applications for half an hour, readily dissolved them. The same effects were also observed in experiments made on the conjunctiva. The conclusion drawn from these experiments is that the therapeutic effects of an hyperemia are due at least in great part to the increased collection of antibodies in the affected tissues or organs.

NEUROLOGY AND PSYCHIATRY.

Extensive Brain Loss Without Impairment of Intellectual Faculties.—The famous crowbar case has always been cited as evidence that there may be severe injury to the frontal lobes without much disturbance in brain activity. Confirmation of this belief is found in a case reported by W. KEATE (Med. Rec., Oct. 17, 1903). A miner was struck by a premature explosion while standing bent over the hole. Both eyes were blown out, the bones of the roofs of the orbits were driven into the brain, and the skin and muscles from the forehead were torn off. There was a hole in the frontal bone about the size of a ten-cent piece. The brains were exuding from these openings. The openings were smoothened and enlarged and twenty small stones and several pieces of bone were removed from the anterior portion of the brain. At least an ounce of cerebral matter came away. The patient has never for one moment been unconscious. He answers all questions intelligently and accurately describes the details of the accident. He has never complained of pain, and says that his head feels paralyzed.

General Paralysis of the Insane.—Some extremely interesting data on paralytic dementia are communicated by B. S. GREIDENBERG (Russ. med. Rundschau, No. 14, 1903) covering a period of observation extending over ten years of very active asylum practice. He has some years ago pointed out that paralytic dementia is on the increase, and especially so among women, the proportion being 10 to 5, and never less than 10 to 4. Attention was also drawn to the fact that the disease is no longer a city disease, for it is gradually invading even villages and small towns. In the city the affection grows what he calls more and more "democratic," attacking the lowest strata of society, again largely women. As the chief causative factors of general paralysis the author considers syphilis, alcohol and heredity; although syphilis is found in a preponderating proportion of cases, it nevertheless cannot be considered as the only etiological factor of the disease. The present article embraces the results of investigations covering a period of twelve years, during which time the author had under treatment the enormous number of 7,090 insane patients, among whom 800 were general paralytics, forming 11.28 per cent. of the entire number. It is interesting to note that among the low classes of society the women form a majority of patients attacked with general paralysis, while higher up the number of men is twice that of women. As regards occupation the common unskilled laborer heads the list, followed by the peasant, merchant and official, professional, skilled laborer, and so on down the list. Sixty per cent. of the entire number were made up of married people, while unmarried formed but 15 per cent. Etiologically syphilis was found in over 50 per cent. of the cases, alcoholism in 38 per cent., the rest was heredity, psychical emotions and traumatic influences.

Manhattan Dermatological Society.—The following officers were elected for 1904: I. P. Oberndorfer, M.D., President; E. L. Cocks, M.D., Vice-President; A. Bleiman, M.D., Secretary and treasurer.

The Medical News.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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SATURDAY, DECEMBER 19, 1903.

HERBERT SPENCER.

IN common with all scientific men the members of the medical profession have good cause to mourn the passing of Herbert Spencer. Although he was not a contributor to medical science in any but the most general way, he was the great exponent of the philosophy of all science—the one man who has done the most to dignify the claim of science to be the final arbiter and adjuster of the thoughts of men. In the death of Mr. Spencer the world loses the last of that great group of scientific leaders of whom, with Darwin and Huxley, he may be said to have formed a great triumvirate in the English-speaking world.

The great merit of Herbert Spencer, if we do not misapprehend him, was not so much in the specific results of his labors as in his method. All his conclusions will not go unchallenged, but in the vast survey which he took of the domain of human knowledge he supplied a scientific organon which will survive so long as men remain true to the teachings of inductive science. Spencer was an evolutionist before Darwin, and in the principle of evolution he found a method which is not confined to mere biology, but which is fruitful in results in psychology, sociology and ethics. The whole panorama of human thoughts and human interests passed in review before that master mind, and were subjected to an analysis which points to the final attainment by mankind of a satisfactory scheme of the knowable. Beyond that impassable bourn Spencer never attempted to penetrate. He was satisfied with the universe as it lay before him. His merit consists preeminently in the fact that he taught men the limits of rational science.

That there will be a reaction from Spencer is inevitable, and the signs of it were visible for some years before his death. The metaphysical and theological mind will not rest content with the knowable. It must seek to penetrate the veil—which possibly only hangs in front of a blank wall. The fate of science, and with it possibly the fate of modern civilization, may depend more than we perceive on the courage with which scientific men adhere to the principles of Spencer. That the battle is not yet won must be apparent to the student of the tendencies of the times. There are reactionary forces at work always and their activity makes all the more deplorable the loss of this luminous and gigantic mind.

Already it is pointed out with a kind of gleefulness that Spencer's work was not without flaws. His psychology and his sociology do not always stand the test of criticism and increased knowledge. We are told that he was not an original investigator—that he was a bookman, a schoolman, who merely took what others gave him. Such criticism merely skims over the surface of his work. Beneath all lies the substructure of pure thought, and over all lies the illumination of a great beacon light of scientific method. The details can be altered or shifted as the progress of science may require, but the system will remain a true reflex of human knowledge.

In his personality Herbert Spencer was the type of the modern philosopher. As was said of Marcus Aurelius, he lived without delusions. In his death the world suffers an irreparable loss, but his bequest to mankind is an example of high living and accurate thinking, which the world will ignore at its peril. For the medical profession he was an example and an inspiration, and it owes him the tribute due to a great scientist.

UNCHARITABLENESS OF THE CHARITY ORGANIZATION SOCIETY.

THE Charity Organization Society has done much to assist the medical profession of this city in its efforts to restore to health those sufferers

from disease who are unable to pay for necessary care and treatment. The scope of the work of this organization is very broad, and the assistance it furnishes to those in ill health is but one of its aims. Yet the doctors connected with our dispensaries and charitable institutions are fully alive to the great need of more help in caring for the sick-poor, and welcome and encourage any and all who offer their time, or money, or influence. Perfect harmony should certainly exist between the doctor, who has since the time of the father of medicine, been the friend of the unfortunate, and those who would be philanthropic and charitable.

It is, therefore, with deep regret that we notice a most uncharitable utterance in "Short Stories," a little book published by the Charity Organization Society and sent out with their recent appeal. The sixth story is headed, "The Story of How We are Disappointing Doctors." It is a tale of kind treatment and appropriate medical care given by a nurse, with happy results, to a sufferer from consumption. We do not find in the story itself any character such as a "disappointed doctor," and the inference would be that the writer thinks doctors are disappointed by having cures take place.

Charities, the weekly publication of this organization, will doubtless try to make amends editorially for this uncharitableness toward a profession which is nothing if not charitable. It is not that medical men care for their own feelings —they are too broad-minded for that—but such a heading is repulsive to all who have felt the sympathy and kindness of a physician—and who has not?—and the appeal is likely to bear little fruit.

We do not believe Mr. de Forest, Mr. Morgan, Mr. Bannard or Mr. Devine would have permitted this error had they seen the proof sheets.

THE NEW ANTITUBERCULOUS SERUM.

Notwithstanding the almost total failure of Marmorek's antistreptococcus serum to accomplish the remedial effects originally claimed for it, the announcement that the young Austrian bacteriologist who, for nearly ten years, until quite recently, has been connected with the Pasteur Institute in Paris, had discovered a new serum for tuberculosis, attracted world-wide attention in medical circles. On November 17 last, at the meeting of the Academy of Medicine in Paris, Marmorek made a definite announcement of the details of the method by which his new serum is prepared and the line of thought that has led him up to its discovery. We have had an opportunity to see an early copy of his original paper, and while we fear that his first announcement of results is, as is usually the case with remedies for tuberculosis, overenthusiastic, we feel that our reader's interest in the subject and certain suggestive details of the biology of the tubercle bacilli and its toxin justify our giving the new remedy and theory some attention.

Many of those who were present at the International Medical Congress at Paris in 1900 will recall the fact that Marmorek presented a paper to that body in which he described the various types of tubercle bacilli which he had classified in his laboratory at the Pasteur Institute. He dwelt particularly on the cultural characteristics of the microorganisms and demonstrated that tubercle bacilli retained their primitive characteristics only for a short time after being transferred to an artificial medium. It is in the tubercle bacilli grown in artificial media that the toxin called tuberculin, originally discovered by Koch, is formed. There are many reasons for doubting that this is the real toxin produced by the tubercle bacillus when it grows in animal tissues. Small amounts of tuberculin produce no reaction in healthy human beings. They produce, however, a very serious reaction in those suffering from even minimal lesions of tuberculosis. Finally, small injections of tuberculin produce very little effect on animals or human beings suffering from very severe forms of tuberculosis. Marmorek considered that this series of contradictions quite justified him in rejecting the notion that tuberculin was the true toxin of tuberculosis.

His effort was to secure the growth on artificial media of tubercle bacilli that would retain their primitive characteristics. In human beings and in animals the tubercle bacillus normally has its habitat either in leucocytes or in giant cells. Marmorek accordingly tried to grow the tubercle bacilli in the presence of leucocytes freshly obtained from animal tissues of living animals. He failed, however, to secure the persistence of the primitive characteristics of the tubercle bacilli by this method, as it is very difficult to secure growths of the bacilli. His next step was to prepare a leucotoxic serum. This was secured by injecting the white cells of small animals into the calf and afterward withdrawing its blood serum. On this he was able to secure a rather

abundant growth of tubercle bacilli. He had noted, however, that in laboratory animals, as also in human beings, in cases of generalized tuberculosis, the liver is usually the last organ attacked and is often found free from the disease. There seems to be some special resistive quality in its substance then. He argued that this quality could be used to increase the vitality of tubercle bacilli.

Accordingly, to his leucotoxic serum he added bouillon made from liver substance to which a slight amount of glycerin was added. Grown on this glycerinated leucotoxic liver bouillon the tubercle bacilli did not thrive well except by careful selection of what seemed to be hardy colonies. Bacilli that did grow, however, retained their primitive characteristics much longer than on any other artificial medium and failed entirely during their growth to produce any tuberculin, though they did produce another characteristic toxin. By the use of graduated doses of this toxin, Marmorek was able to obtain some immunity to tuberculosis in the lower animals, so that after a time the leucocytes were not only englobed, but digested tubercle bacilli were injected into the animal and so kept it immune from the effects of the microorganism.

By graduated doses of this product the blood serum of the animal acquired antitoxic qualities and this could be used for the protection of other animals and for hastening the cure of tuberculous lesions, especially in rabbits, which are not so sensitive to tuberculosis as guinea-pigs. Very large doses of the serum have to be employed for this purpose, but these animals present little resistive vitality to the disease, and in the larger animals and man it was hoped that their natural resistive powers would so aid the action of the serum as to require smaller doses. In nearly two thousand cases now the serum has been used on human beings in the hospitals of Paris and in various parts of France. Necessarily, at first only hopeless cases could be secured for purposes of observation. Even with regard to these cases the results were so satisfactory as to tempt physicians to further experiments.

Many of the symptoms even of tuberculous meningitis are relieved by the injections of the serum. The paralysis lessens, the coma disappears, the fever is less marked and the vasomotor symptoms are diminished. So far, however, no case of meningitis has been cured. In severe cases of pulmonary tuberculosis with cavities and abundant expectoration, with many bacilli, the beneficial effect is noted very soon after the injections have begun. The expectoration lessens in amount, the number of bacilli decrease and the patient's general condition improves. Some of the apparently hopeless cases are practically cured, though sufficient time has not elapsed to absolutely announce a cure. In milder cases of pulmonary tuberculosis, the effect is immediate and striking. Hectic fever disappears rapidly under the treatment and night-sweats and the loss of appetite consequent upon the fever disappear with it. Hectic fever, far from being the contraindication to the use of the serum, constitutes a very favorable condition for the demonstration of its efficacy and these cases have been particularly sought out by Marmorek and his assistants in order to make the value of the serum clear.

It is in cases of surgical tuberculosis, however, that the serum is claimed to give the best results. In complicated Pott's disease, with abscesses and fistulæ, rapid improvement is noted shortly after the injections are begun. Hip-joint disease is as favorably affected as is Pott's disease, and abscesses are absorbed without delay and any unfavorable sequelæ under the influence of the antituberculous serum. Marmorek considers most of the cases of idiopathic pleurisy as of tuberculous origin. In this he is justified by many bacteriological tests of the injection of apparently the simple serous transudate of pleurisy into animals with the consequent development of tuberculosis. Pleurisy is rapidly benefited by the serum in Marmorek's hands. The exudate is rapidly absorbed, the pain and discomfort, and especially the dyspnea, are diminished and the patient's general health, if at all run down, improves under the serum injections.

Unfortunately, in the hands of observers outside of France the new serum has not proved so beneficial as in its inventor's. Some German investigators have even reported harmful results from its use. Marmorek's resignation from the Pasteur Institute is said to have been due to a disagreement with his colleagues over the preparation of the serum for commercial purposes, its exploitation in the press, and some doubts as to the results obtained with it. Generally, in Paris medical circles there is an air of incredulity with regard to it. While the subject is of interest it is doubtful if any great hopes should be raised because of it. Some of the work done may be as valuable as it is interesting and suggestive. As Marmorek himself says, at the conclusion of his article, many more observa-

tions under varying circumstances will have to be made before its true place in medicine can be appreciated. Though life is almost as short as in Hippocrates' time, art is quite as long, and we must be patient.

THE PROTOZOON OF SCARLET FEVER.

Before the Boston Society of Medical Sciences, on Tuesday evening, Dr. Frank B. Mallory described, with the aid of microphotographic lantern-slides a protozoon which he supposes is the infective cause of scarlet fever. The supposed animal was found in the skin of four cases of this dire disease, sometimes in the lymph spaces, but most abundantly in the epithelial cells of the corium close to the epidermis.

In many essential respects the organism is somewhat like that now known to be the occasion of malaria. It appears in two forms, one a radiated rosette and the other a granular form with a knotted reticulum not unlike that of the nuclei of certain animal cells. The rosettes are apparently at first about two micromillimeters in diameter, circular in appearance or often elliptical. On the center of each is a small rounded mass which stains opaque with methylene blue. Radiating from this central mass are from ten to eighteen segmented spindles each with an enlargement at its peripheral end. In what appear to be later stages of development of this object the rosette has enlarged somewhat and the segments separated from each other, while in still later stages some of the now strongly club-shaped segments have become loosened from the central mass and appear as independent dots of deeply stained tissue. Later on these seem to have developed granulations, and arranged themselves often in clumps of four. There are evidences in the appearance of these segments that when fixed in the Zenker's fluid they were in ameboid movement. The later stages of the rosettes and clumps often have a diameter of ten or twelve micromillimeters.

Dr. Mallory found it difficult, in many cases of the disease, to find these bodies, the skin area being so large. No desquamative stage showed any, and they could not be found in any of the liquid discharges of the patients. The protozoa seem especially abundant in the papillæ of the skin, and in the superficial lymphatic vessels. For this new parasite their discoverer suggests the name *Cyclastis scarletinalis,* as fairly descriptive of their form. That these objects are not artefacts appears from the circumstance that of three bits of skin from one case, all stained in the same vessel at the same time, one specimen had many of the rosettes, one few, and one none, while in the very numerous preparations of skin similarly made in the study of the germ of smallpox nothing of this nature whatever could be discerned. Dr. Mallory closed this, his preliminary report, by saying that while he personally believed this to be the infectious agent of scarlet fever it had not as yet been actually proven. To his large audience and numerous observers of his photographic preparations made from cases, the impression was strong that the occasion of this now most feared of children's infectious fevers has indeed at last been detected, and that, almost in the act. If so, another of the bêtes noires of parents is probably started on the road to vanquishment by the skill and energy of modern medicine, although until some medium on which a pure culture of protozoa may be raised is discovered, the production of a certain antitoxin for scarlet fever, as for smallpox, may be delayed.

ECHOES AND NEWS.

NEW YORK.

Gift for Public Charities.—A merchant of Maiden Lane who recently aided in the conviction of a thieving public stores employe received from the Government a check for $500. This he has divided into parcels of $100 each and given to the following charities: The Police Pension Fund, the Montefiore Home, the Presbyterian Hospital, the United Charities, and the Educational Alliance. A very neat tribute to a very worthy cause.

Lectures on Alcohol and Opium Inebriety.—Dr. T. D. Crothers, of Hartford, Conn., Professor of Mental and Nervous Diseases at the New York School of Clinical Medicine will deliver a course of four lectures on "Inebriety from Alcohol, Opium and other Narcotics," January 5 and 6, 1904, at 4 P.M. and 8 P.M. in the hall of this school, 328 West Forty-second Street, between Eighth and Ninth avenues, New York City. The medical public are cordially invited to attend.

To Vaccinate New York.—The Board of Health in this city is taking vigorous steps to prevent an outbreak of smallpox in New York, and to that end has appointed 64 new inspectors, who will co-operate with the large force of regular inspectors in searching for persons who have not been vaccinated. Many cases of smallpox have been reported lately in Philadelphia, Pittsburg, Allegheny, and other cities in Pennsylvania, and the New York City health authorities are determined that a similar outbreak shall not be felt here. Dr. Lederle said last Monday that the additional corps of 64 inspectors had been engaged purely as a matter of precaution. "There is not," he said, "any reason to believe that this city will be visited by an epidemic of smallpox. Our purpose is to nip the disease in the bud, and the new members of our corps will assist the other inspectors in visiting all of the schools, tenement houses, department stores, and other places where people are congre-

gated and are, therefore, liable to exposure. Of course, a case of smallpox is apt to crop out now and then, but there is no reason whatever why the disease should spread, if proper measures are taken at the outset."

Insanity in Colorado.—Colorado is facing the situation of insufficient provision for its insane. The Pueblo asylum is overcrowded, and the Denver County Hospital is caring for 119 such patients, in a building designed for about half that number.

The Associated Alumni of the Mount Sinai Hospital.—The following resolutions were adopted by this body: Our honored president and companion, Dr. Edward Fridenberg, has passed from among us in the fulness of life and activity. We recall with pride the fame he had achieved in the practice of his profession, and the esteem in which he was held by his patients. We recall his unusual kindness, his generous courtesy, his sweet companionship, his broad fairmindedness, his remarkable breadth of character, his great love of humanity and above all, his great love for children. His culture and his love of the beautiful dominated his life and thought, his qualities made his life an example which we shall always cherish. A copy of this shall be sent to the family and to each of the New York City medical papers. For the Association: Samuel M. Brickner, M.D.; Edwin Sternberger, M.D.; William H. Luckett, M.D.

Manhattan Dermatological Society.—Regular monthly meeting held on Friday evening, Dec. 4, 1903, at the residence of Dr. J. Sobel, Dr. L. Weiss, presiding.

Dr. W. S. Gottheil presented a case of seborrheic eczema (shown at November meeting) involving hairy parts of the face, chin, upper and lower lips, eyebrows and eyelids. Marked improvement, following the use of sulphur and resorcin ointment, is seen; the eczematous condition is very much paler, the pus follicles diminished and the scaly element reduced.

Dr. C. W. Allen was of the opinion that many of these cases begin as a primary lesion in the nose. He saw just such a condition following chronic rhinitis and ozena; the irritating nasal secretions setting up a dermatitis of the upper lip and from here infection spreads to the hair follicles and also spreads to distant parts of the face, being conveyed by means of the patient's fingers or handkerchief. The involvement of the follicles was secondary and often severe enough to resemble sycosis. In the treatment he advocated swabbing of the nasal cavities with 25 to 50 per cent. aq. sol. ichthyol. For the dermatitis the X-ray. Dr. Crary agreed with Dr. Gottheil in calling it seborrheic eczema with secondary folliculitis. Dr. Abrahams took some exception to Dr. Allen's remarks, inasmuch that the majority of patients with chronic rhinitis never show involvement of adjacent or contiguous skin structures. He looks for another cause in such cases; probably the bacillus of pseudo-erysipelas; this site being a favorite seat for such infection. Although willing to admit some cases might come under Dr. Allen's statement, this case is probably of different origin.

Dr. Weiss suggested epilation of the vestibulæ nasi and application of 2- to 5-per-cent. nitr. silver solution, for the nasal complication; sulphur and resorcin ointment for the eczematous condition. He also spoke favorably of the X-ray.

Dr. B. F. Ochs presented a case for diagnosis. A male of thirty years with a chronic affection of the nails of 8½ years' duration. About nine years ago patient had an eruption on inner aspect of thighs, scrotum and buttocks. Dr. Ochs inclines to the belief that this eruption was an eczema marginatum, and from this patient subsequently infected his nails. All the finger-nails were involved and some of the toe-nails. The nails were cracked, brittle, scooped out (spoon-shaped) and ridged.

Dr. Gottheil considered three conditions: favus—this, he thought, could be excluded; in favus he expected to see greater undermining of the matrix with consequent pressure atrophy and more deformity of the nails. Psoriasis, as an isolated lesion was extremely rare; nevertheless it should be thought of. Ringworm—this he thought most probable to be the case in this patient. The microscope might decide the question, although admitting that microscopical examination of the nails was very unsatisfactory.

Dr. Weiss said the condition was undoubtedly parasitic; the diagnosis of nail affections was a difficult chapter, as no positive information could be deducted from microscopical findings. In making a diagnosis he would be guided in a great measure at least by clinical signs and the history.

Dr. Allen would call to his aid the microscope. Although he suspects this case to be one of tricophytosis, one should not lose sight of the possibility of its being favus; the latter is a much more common nail affection than we suppose. He saw favus of the nails, when no other lesion was present anywhere on the body. The source of infection and mode of contamination in such cases was as obscure as it was interesting. In favus cases he usually finds a small, yellowish spot somewhere beneath the middle of the nail, which microscopically shows almost a pure culture of spores. Drs. Cocks and Crary believe the condition to be parasitic. Dr. Oberndorfer called it tricophytosis; most probable. He expected to see greater scaling and more pronounced lesions if it were psoriasis, chronic eczema might be considered, but the absence of eczematous lesions elsewhere rather excluded such a diagnosis. It was undoubtedly parasitic. Dr. Bleiman stated that the microscopic picture would probably be different when scrapings or nail sections from the fingers and toes were compared, owing to the different existing conditions. The fingers being exposed, cool and dry, while the toe-nails are confined and subject to heat and moisture. The differential diagnosis between favus and tricophytosis, even with the aid of the microscope, was no easy task. Dr. Allen said he recognized the favus spore by its larger size and more oval shape. Dr. Abrahams remarked that he saw a condition which resembled present case in a housewife, whose hands were exposed to water and soda. The condition being one of traumatic chronic eczema due to excessive moisture, constant irritation and maceration.

In the patient exhibited no such etiological factor existed, and hence he looks for a parasitic origin.

Dr. Crary showed a photograph of an infant ten days old with favus lesions on scalp and elbow, contracted from its mother, whose lesion was on the scalp.

PHILADELPHIA.

Phipps Institute Lecture.—The third lecture in the series under the auspices of the Phipps Institute will be given December 29 in Witherspoon Hall by Dr. G. Sims Woodhead, of England, Professor of Pathology in Cambridge University and a member of the Royal Commission on Tuberculosis. The subject of the lecture is to be "Paths of Infection in Tuberculosis."

Compulsory Vaccination at University.—The Provost of the University of Pennsylvania has officially written to the dean of each department making

compulsory the vaccination of every member of the teaching body, every member of the student body and every employe who has not been successfully vaccinated within the last five years.

The Statue of "The Medicine Man."—The statue of "The Medicine Man" was during the past week formally presented by the Fairmount Park Art Association to the city of Philadelphia. The statue, which represents a young Indian, equipped in proper insignia, mounted upon a saddleless horse, has been placed at the head of Strawberry Hill, in East Park.

Plans for Medical Inspectors Partly Approved.—Upon the recommendation of Finance Committee, which reversed its first action, Common Council has approved an appropriation of $60,000 to the Bureau of Health to carry out, partially at least, the plans of Director Martin for reorganizing the system of medical inspection. It is believed that Select Council will concur. The request for 25 nurses was not allowed.

Intussusception During Typhoid Fever.—An interesting case of this lesion was reported at the meeting of the Philadelphia Academy of Surgery December 7 by Dr. G. G. Ross. The patient was a boy who, about the twenty-fifth day of an attack of typhoid fever and after having several hemorrhages, developed symptoms of perforation. He was operated upon a few hours after the onset of symptoms but on opening the abdomen no evidence of peritonitis was visible. Examination of the lower portion of the ileum revealed no perforation. Further search resulted in the discovery of an intussusception three inches in length at a point three feet below the junction of the duodenum and jejunum. The invaginated gut was easily reduced. The patient is now well on the road to recovery, although he had several hemorrhages after the operation.

Pancreatic Calculus.—Dr. G. P. Müller reported this case at the Pathological Society December 10. The lesion was found post mortem in a man of sixty years, who was admitted to the German Hospital while critically ill and died three days later. No history of his past or present illness could be obtained. The cause of death was apparently pulmonary tuberculosis. All the biliary ducts were found to be patulous, but the duct of Wirsung was occluded by a large number of closely packed calculi, some of which were nearly a centimeter in length. They gave the reaction of calcium carbonate. The parenchyma of the pancreas was almost entirely replaced by fat, the islands of Langerhans being uninvolved.

Trypanosoma Lewisi—Drs. W. M. L. Coplin and A. G. Ellis exhibited specimens, in stained preparations and in fresh blood, of *Trypanosoma Lewisi*. The parasites were at first secured through the kindness of Dr. Novy, of Ann Arbor, but later specimens for inoculating purposes have been secured from wild gray rats caught within the enclosure of the Philadelphia Hospital. Of 23 specimens from that institution 10 contained the parasites in large numbers. Broadly speaking, the young rats were found to be infected and the old ones uninfected. Rats from other sections of the city have not been examined. Of 16 wild rats from Asheville, N. C., five were found to contain the parasites. Studies are being made of the tissues of infected rats with as yet no positive results, except in one instance, which may be of considerable significance. In the lung of an infected rat which had died was found quite large areas of distended vessels and hemorrhage which practically amounted to infarction. This fact is of interest in connection with the recently reported case of atypical pneumonia in a person who was suffering from trypanosomic infection. Although the parasites could not be demonstrated in the vessels, the occurrence of these hemorrhagic areas suggests the possibility of pulmonary infarction in cases of infection by the parasite.

Hydrophobia Still Unknown to the Coroner.—At the recent meeting of the Philadelphia County Medical Society, Dr. G. M. Illman reported a case of hydrophobia with autopsy. Dr. Illman deplored the fact that the disease has no official recognition in the city and is not even generally recognized by the medical profession. When he returned the case in question, the coroner's office refused to accept his certificate of death from hydrophobia and insisted on classifying it as due to extreme hysterical convulsions following the bite of a dog. The patient had refused to undergo the Pasteur treatment until the symptoms of the disease had made their appearance. Dr. Illman argued in favor of muzzling dogs and also of quarantining them at all seasons of the year when they show signs of illness. In the discussion Dr. M. P. Ravenel said that in addition to his experience with human beings he had demonstrated beyond a doubt in more than 150 animals that hydrophobia is a distinct disease.

American Roentgen Ray Society.—The fourth annual meeting of this Society was held in Houston Hall, University of Pennsylvania, on December 9 and 10. A very instructive exhibit of apparatus was made and papers were read by many of the best known X-ray workers of the country. Variable results were reported, some having met with disappointment in the therapeutic effect of the agent in question, others reporting very satisfactory series of cases. Among the Philadelphians who read papers were Drs. W. M. Sweet, C. L. Leonard, G. E. Pfahler, W. H. Newcomet, M. K. Kassabian, and H. K. Pancoast. The address of President Goodspeed was upon "The Trend of Modern Thought Upon the Subatomic Structure of Matter." The meeting of 1904 will be held in St. Louis. The officers elected were: President, Dr. James B. Bullitt, of Louisville; secretary, Rr. Russell H. Boggs, of Pittsburg; treasurer, Dr. Weston A. Price, Cleveland; first vice-president, Dr. John B. Murphy, Chicago; second vice-president, Dr. Charles L. Leonard, Philadelphia; third vice-president, Dr. Edwin E. King, Toronto; executive committee, Dr. Preston M. Hickey, Detroit; Dr. Kennon Dunham, Cincinnati.

CHICAGO.

Suicide Increase is Great.—An alarming increase in the number of cases of homicide during the last year is shown in the annual report of Coroner Trager. More than 50 per cent. of the fatalities the Coroner charges to the practice of carrying concealed weapons. Interesting data concerning the gloomy work of the office is also shown by the report. During the year 459 suicides were reported and investigated. Of these, 239 were of married people, from which the Coroner argues that more unhappy persons are to be found in the dual state than in single life. Of 225 suicides who died by poison, 169 ended their lives by taking carbolic acid. The Coroner's office investigated 6,053 cases during the year, arranging for 3,194 inquests. Next to self-destruction, railroad accidents claimed the greatest number of victims—350—nearly half of these being slain at crossings. While more cases were investigated during July than any other month, the greatest number of suicides occurred during September, reaching as high as 46. March is also a bad month for suicides, having a record of 44. The

greatest number of deaths reported to the Coroner occurred between the ages of 30 and 40.

Health Matters.—Although the November (1903) mortality was below the average of the previous ten years, 13.71 and 13.80 per one thousand respectively, the month has not fulfilled the hope that it would continue the decreased rate of the previous five months, and so offset the high rate of the earlier months of the year. The probabilities now are that the total deaths for the year will be in the neighborhood of 28,400 and that the death-rate, computed on the Chicago Health Department's conservative estimate of 1,885,000 population, will be about 15 in the thousand. This will be higher than that of any year since 1899, when the rate was 15.56 per thousand. The week's mortality was unusually low for the season of the year; compared with that of a year ago it shows a 12.5 per cent. decrease in proportion to the population. The causes of death showing the most marked decrease are Bright's disease, consumption, pneumonia, scarlet fever, and typhoid fever. The acute infectious diseases all show a reduction in the number of deaths and in the number of cases reported.

Sympathetic Ophthalmia.—Dr. Oscar Dodd reported this case at a recent meeting of the Chicago Medical Society. He emphasized the necessity of care in watching any case of injury that sympathetic inflammation may not develop, and the danger of passing over any trouble in the other eye, however slight, as being a simple matter. He laid stress particularly on the hopelessness of treatment in these cases, as no severe case had ever been cured.

Pregnancy Following an Operation in which the Right Ovary was Removed, Left Ovary Resected, and the Round Ligaments Shortened Intra-abdominally.—Dr. Anna M. Braunwarth read a paper on this subject before the Chicago Medical Society, Dec. 9. The points of interest in this case may be summarized as follows: A case of cystic degeneration of the ovary, and retroversion of the uterus, one ovary having been removed and the other resected, and the round ligaments shortened intra-abdominally. Within four months after her recovery from the operation, the woman became pregnant and was delivered of a full term child, with normal labor. The vomiting of pregnancy ceased as soon as the pessary was removed. During her puerperium the temperature rose to 104° F., due to retained secretions in the uterine cavity, and subsided after curetting. The shortening of the round ligaments intra-abdominally intertered in no way with carrying the child to term, or with delivery. The case teaches that resection of ovaries is not opposed to pregnancy; that cystic degeneration does not necessarily prevent normal ovulation and conception, and that a pessary retained as a uterine support may prove to be an irritant, which will cause severe vomiting in pregnancy.

Permeability of Rubber Drainage Tubing to X-ray.—Dr. Joseph F. Smith read a paper on this subject before the Chicago Medical Society. The following investigation was carried out at the suggestion of the late Professor Christian Fenger, and is based upon a case which occurred in his service at the Presbyterian Hospital in the latter part of the year 1900. Miss C., aged twenty-nine years, was admitted to the hospital suffering from an extensive tuberculous abscess in the region of the right iliac synchondrosis, which had previously been opened and drained without improvement. The patient was anesthetized and through an extensive incision part of the right ilium was resected, and an extensive tuberculous abscess found in the right iliac fossa. From the abscess two sinuses were discovered, one leading upward along the psoas muscle toward the upper lumbar vertebræ and the other leading downward into the cavity of the pelvis. These sinuses were isolated and explored as far as possible, and drained by means of No. 8 Nelaton catheters, one being placed in the upper sinus to a depth of eight or ten inches, and the other to an equal depth in the lower sinus. Both were brought out through the external incision at the same point, and secured by fastening with safety pins, and a large absorbent and protective dressing applied. A few days later, when dressing the patient, it was discovered that one of the catheter drains had disappeared from the wound, the other being still in place. Careful search failed to reveal the presence of the drain in the dressings, and the special nurse in charge of the patient, upon being carefully questioned, declared positively that the tube had not fallen out during any of the dressings. The conclusion that the tube must have slipped into the wound and been lost in the abdominal cavity or in the cavity of the pelvis seemed most probable. After going over the facts carefully, Professor Fenger decided to reopen the wound and make careful search for the missing drain, and accordingly ordered the patient prepared for operation. On the day set for the operation it was decided to take an X-ray picture through the region in which the rubber drain had been placed, to see if any shadow of the missing tubing could be obtained; although at that time it was not thought probable the rubber tubing would cast a shadow of sufficient density to enable it to be seen through the thickness of the body. However, a skiagraph was taken and contrary to expectations a very distinct and definite shadow of the upper tube was obtained. Since the drains were both exactly the same size and kind of material, both being No. 8 Nelaton catheters, it seemed a certainty that the second tube should also show if still present within the body. Skiagraphs were made of the entire abdomen, from the pelvis to the diaphragm, but no shadow of the second drainage tube was obtained. It was decided, therefore, that the tube must have slipped out and been lost in the dressings, notwithstanding the positive assertion of those in charge of the dressing of the patient to the contrary. The exploratory operation to search for the missing tube was abandoned, and the patient went on to an uneventful recovery. The fact that the tube used for drainage in this particular instance produced such a distinct shadow with the X-ray made it desirable to ascertain whether or not all of the kinds of rubber drainage tubing in common use produced shadows that enabled them to be distinguished through a considerable thickness of tissue, and if not all, what particular kind of drainage tubing produced the most distinct shadow. For this purpose samples of pure gum, plain white, corrugated white, and maroon tubing of the same size and thickness were obtained. These with a No. 12 Nelaton catheter were arranged side by side upon a cardboard, and a skiagraph taken through the thigh of a boy eight years of age. In the skiagraph the red catheter rubber gives a very dense shadow; the plain white, corrugated white tubing, cast a distinct shadow, the maroon a somewhat less distinct shadow, while the pure gum tubing produces scarcely any shadow at all. Since various metallic compounds enter into the composition of rubber tubing, it becomes a matter of interest to compare equally thick layers of metallic compounds and their solutions. For this purpose paper boxes having a depth of one centimeter were dipped in melted paraffin to render

them impermeable to solutions, and filled with finely pulverized salts of various metals, and also ½ gram molecule solutions of the same salts. These salts and solutions, prepared by Professor Walter S. Haines and Dr. Frick, were arranged in order upon a plate and exposed to the X-ray. The negative shows that different metallic salts differ widely in their permeability to the X-ray, and that this same difference extends also to their equivalent solutions. It appears also that the permeability depends upon the nature of the positive radical and varies inversely as the atomic weight of the metal forming the positive radical. This matter, however, requires further investigation with a large number of salts and careful tabulation of results before perfectly definite statements can be made. Although some work has been done along this line by Trowbridge and others, further investigation is necessary to clear up the matter definitely. A comparison of the densities of the shadows cast by the salts and solutions shown in the skiagraph explains the variation in density of the various kinds of rubber drainage tubing. The bright red catheter and stomach tubing contained vermilion (mercuric sulphide), HgS, and it will be seen from the skiagraph that the compounds of mercury cast very dense shadows. The maroon tubing contains vermilion (HgS), or sulphide of antimony (Sb_2S_3), generally the latter. The white tubing contains salts of lead or zinc, chiefly lead oxide (litharge, PbO), and these metals cause the tubing to cast quite distinct shadows, though not so heavy as the maroon and red tubing. The pure gum containing no metallic compounds, or only traces of them, cast a very faint shadow when shown through any considerable thickness of tissue. The practical conclusion to be drawn from the facts above stated pertains to surgical work chiefly. In the drainage of cavities or long sinuses, there will be a distinct advantage in the use of rubber drainage tubing that produces a distinct shadow with the X-ray, especially in cases where there is any danger of the drain slipping into and being lost in the cavity or sinuses. For diagnostic purposes also there is a certain practical bearing, because red rubber catheters, stomach tubes, etc., passed into passages of the body, as the esophagus, for example, show in the skiagraph the extent to which the passage is patulous.

GENERAL.

Dr. Finsen is Ill.—A report from Copenhagen, Denmark, dated Dec. 11, states that Dr. Finsen of that city, to whom the Nobel Medical Prize was awarded by the Norwegian Parliament on Dec. 10, is dangerously ill.

Yellow Fever in State of Mexico.—The Texas Health Department is advised that no new cases of yellow fever have appeared at Monterey, Tampico, and other places in Northern Mexico for several days. The Texas quarantine against those places will be raised in a few more days. Dr. Eduardo Liceaga, President of the Superior Board of Health of Mexico, has requested the Mexican Congress to make an appropriation of $100,000 to be used in combating yellow fever on the Gulf coast of Mexico next season. Dr. Carillo, Vice-President of the Board of Health of Monterey, announces that there were about 10,000 cases of yellow fever in that city during the recent epidemic, and that there were 580 deaths from the disease.

The Nobel Prizes.—Although the award of the five Nobel prizes for 1903 does not conform closely to the forecast cabled to this country in October its propriety will be quickly perceived by those best qualified to have an opinion in the matter. More than one perplexing situation has been met with striking sagacity, justice and good taste. Without question the most important work done in physics in the last few years has been in the study of radiation. Two years ago Roentgen received the Nobel prize for his investigations in that field, and last year Lorentz and Zeeman, two Dutchmen, divided the honor. The judges who made the choice this time naturally thought of M. and Mme. Curie. They were aware, too, that in all probability neither polonium nor radium would have been discovered so soon but for Becquerel's observations of the strange properties of uranium eight or nine years ago. Not only is radium obtained from the same ore, pitchblende, but the first characteristic of it which attracted attention was its ability to emit an invisible radiance like that of uranium and the vacuum tube. It was, therefore, decided to put Becquerel on a par with his compatriots. On previous occasions a prize has been divided between two persons, and now three share one. While the pecuniary effect of that arrangement is not so satisfactory as it might be, the honor is the chief desideratum, and that is in no way diminished by division. It is noteworthy, too, that, though Becquerel and the Curies are chemists, their recent researches are looked upon primarily as contributions to physics. Arrhenius, the Swede, who wins the prize in chemistry this year, has well earned it. His text-book in electrochemistry is not only one of the most recent but also one of the most authoritative works on that subject. Moreover, he is the author of the theory of ions, which has been advanced to explain the dissociation of substances by electricity. This was first propounded in 1888, but was so revolutionary in its suggestions that time was needed for its full acceptance. Even yet it does not command unanimous support. Still, in formulating the doctrine, Arrhenius is believed to have rendered valuable service to chemistry. Finsen, of Copenhagen, has been so favorably known through his experiments in healing with electric light that it was generally expected a year ago that he would be honored as he is now. No one needs to be told who Björnsen is, or why he receives the literary prize. The public will certainly approve that award, and many people will feel peculiar joy on discovering that he has not been compelled to share it with Ibsen, as at one time seemed possible. Finally, there will be no doubt about the fitness of according to Mr. Cremer, for thirty years the secretary of the International Arbitration League, the prize for devotion to the cause of universal peace. One of the most interesting phases of the distributions which have been made by Nobel's trustees during the last three years is the nationality of the recipients. Owing to the division of several prizes, nineteen persons in all have been recognized. It will be noticed that the Scandinavian race, of which Nobel himself was a representative, was ignored until this year, and now Sweden, Norway and Denmark are simultaneously complimented. Certainly, there is no chance here for an imputation of partiality. Four Germans, five Frenchmen, three Dutchmen and two Englishmen—Mr. Cremer is the second—are included in the list. The latter is completed by the addition of one Russian and a single Switzer. As yet America and Italy remain unrecognized, but their turn may come next year.—N. Y. *Tribune.*

The Journal of Comparative Neurology and Psychology.—The *Journal of Comparative Neurology*, as originally announced, was open to contributions in the fields of comparative neurology, physiology and psychology. The founder, feeling that the time was ripe for a more thorough correlation of the facts in these different fields, planned to devote the journal as much to the functional as to the structural study of the

nervous system. During the thirteen years of the existence of the *Journal of Comparative Neurology*, the functional side of neurological work, although not wholly neglected, has received far less attention than was originally contemplated, chiefly on account of the continued ill-health of the editor-in-chief, who had intended to devote himself primarily to comparative psychology. Now, however, the editors announce an enlargement of the editorial staff which will insure a more satisfactory representation of the functional as well as the structural aspects of neurology. The journal will hereafter be known as the *Journal of Comparative Neurology and Psychology*. The organization of the editorial staff remains in general as before save that Dr. Robert M. Yerkes of the Department of Psychology, Harvard University, will be the responsible editor for the department of Animal Behavior. He will be supported on the editorial board by representative students of Comparative Psychology and other departments will be strengthened by the addition of collaborators. The attention of psychologists, physiologists and medical practitioners is called to the fact that this is the only journal in any language especially devoted to this large and important field of research. It is aimed to make the journal indispensable to all who are interested in the structure and functions of the nervous system from whatever point of view. They will find much of value in the materials published, for in addition to the recognized fact that the human nervous system can be best understood structurally by a study of its phylogeny, it is now clear that an understanding of the reactions of lower organisms and especially of the evolution of action, is necessary for an appreciation of the functional significance of the human nervous system. For morphologists the journal will continue to be, as in the past, the *vade mecum* in its department. Hereafter the journal will appear bi-monthly, and each annual volume will contain about five hundred pages. The first number of the new volume is to be ready in February. Every effort will be made to secure as prompt publication of acceptable contributions as is consistent with the high standard of scientific and mechanical excellence which has been maintained. Contributions will be accepted in English, German, French or Italian. The subscription price will be $4.00, strictly net (foreign subscriptions $4.30, 18s., M.18, 22fr., L.22). All present subscribers to the *Journal of Comparative Neurology* will receive the volume for 1904 at $3.50. Complete sets of back numbers may still be had at the original price of $3.50 per volume. Numbers are sold separately at prices varying with the contents.

Obituary.—Dr. Elisha Hall Bridges, a prominent physician and medical expert, is dead at Ogdensburg of acute Bright's disease. For years he had been head of the Medical Association in that city. He was sixty-two years old, and is survived by his wife, a daughter, and a son, Attorney Henry W. Bridges, of New York.

Dr. Cornelius N. O'Leary, of 560 West One Hundred and Thirty-third Street, who was killed by a motor train at New Utrecht Avenue and Fifty-seventh Street, Brooklyn, on Saturday night, was buried from his late residence on Tuesday last. Dr. O'Leary was born in Ireland sixty-four years ago, and came to this country with his father when a boy. After graduating from the College of Montreal, he attended the University of the City of New York, and graduated from the Medical Department in 1862. Upon the death of his father in 1864 he succeeded him as professor of philosophy and classics at Manhattan College, which chair his father had occupied since the organization of the college. In 1870 he was connected with the Board of Health in the capacity of inspector, and resigned that position to become a Commissioner of Pharmacy in 1871. He wrote for various periodicals, evolution being one of his favorite subjects. He was a great admirer of Herbert Spencer, and one of his articles, entitled "Evolution in the Light of Recent Research" is well-known in scientific literature.

SOCIETY PROCEEDINGS.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, held October 14, 1903.

The President, William H. Park, M.D., in the Chair.

Pathological Anatomy of the Shiga Bacillus in Infections of the Intestines in Infants.—Dr. John Howland presented a paper on this subject. The organism found in all the cases examined was the type known as the acid-producing or Flexner-Manila organism; that is, it fermented glucose and saccharose, but not lactose, and split mannite with acid formation. It produced an early acidity in milk with a subsequent alkalinity, and agglutinated with the "Harris" serum in high dilutions. Thirty-two cases were examined. From a study of these cases it seemed that they could be grouped with considerable accuracy according to the histological findings. Group A, comprising five cases, represented the severe infections where the pathological changes were of a pseudomembranous type. The membrane may be of irregular distribution or very extensive, involving both the colon and the ileum. The pseudomembrane was composed chiefly of necrotic tissue, desquamated cells and countless bacteria. Fibrin was present in very small amounts or not at all. There was a necrosis of the mucosa and it was this necrosis which chiefly gave the appearance of a false membrane; but in all these cases the necrosis did not extend beyond this coat. In the necrotic tissue and at its border there were hemorrhages, and thromboses, and it was divided from the healthy tissue by a zone of small cell infiltration, containing both mono- and polynuclear cells. The submucosa in four of the severe cases was much swollen and infiltrated. The cellular infiltration was composed of cells resembling Unna's plasma cells and was most marked about the blood vessels. The muscular coat showed only a slight mononuclear cell infiltration. The peritoneal coat was normal. Group B included four cases in which the mucous membrane in both the small and large intestines were in a good state of preservation. The changes occurred chiefly in the lymphoid follicles. The submucosa was normal as were the muscular and peritoneal coats. Group C includes those cases characterized by superficial necrosis and ulceration in the mucous membrane not limited to the follicles as in Group B, and not accompanied by the formation of a pseudomembrane as in Group A. In this group there were five examples. The changes consisted of congestion and hemorrhage into the mucosa with necrosis of isolated portions of the mucous membrane, which necrotic portions might be exfoliated so as to form ulcerations on the surface. The necrotic areas and ulcerations were usually surrounded by a zone of inflammatory reaction. The submucosa occasionally showed cellular infiltration. The other coats were not affected. Group D contained 14 cases which showed microscopically but few discoverable lesions, beyond congestion and moderate hyperplasia of the lymphoid tissue and, in one case, of slight cellular infiltration of the submucosa. There was very little histological change. As far as the other organs were concerned there were no characteristic findings. The mesenteric nodes were usually somewhat enlarged, rarely markedly so. The lungs showed hypostatic congestion and small areas of bronchial pneumonia. The

liver was fatty in about the same percentage as in other infantile conditions. The spleen was as a rule unaffected unless some other infection was added. The kidneys showed cloudy swelling. Cultures from the organs did not show the Shiga bacillus. It is evident that the Shiga bacillus may produce a great variety of lesions and that with these lesions may be associated all grades and types of diarrheal disease as distinguished by clinical symptoms and pathological findings.

Bacterial Flora in Infantile Diarrhea, with Especial Reference to the Dysentery Bacillus.—Dr. Charles W. Duval read a short abstract on this work, which he and Mr. E. H. Schorer had done during the summer, in the laboratory of the College of Physicians and Surgeons. Seventy-nine cases of so-called "summer complaint" were examined, under which clinical title were included all types of the disease from mild diarrhea to severe ileocolitis. The stools were examined within ten to fifteen minutes after they were passed and to this fact was due a large amount of the success obtained in isolating the *Bacillus dysenteriæ*. The bacillus was present in greater or less numbers in every variety of intestinal disturbance, and also in normal stools from infants. Of the cases of summer diarrhea, 75, or 94 per cent., showed the dysentery bacillus. The character of the stools was no certain indication of the presence of the *Bacillus dysenteriæ*, though the organisms were most likely to be isolated from cases showing bloody mucus. Plates from the stools showed a few scattered colonies or almost pure cultures. Five of the cases examined showed bacilli of the types "Harris" and "Shiga;" or, in other words, those which ferment or do not ferment on mannite. In this same group of stools, the Bacillus "Y" of Hiss and Russell was also isolated. Five cases contained the two types. In three the fermenting type predominated in the proportion of eight to three; in two the non-fermenting was present in greater numbers. In 11 cases the bacillus was of the non-fermenting type, or true "Shiga." In 58 cases only the fermenting or "Harris" type could be found. In the identification of the colonies after they had been fished from the plates, the semi-solid medium of Hiss was found to be superior to glucose-agar, as it excluded motile organisms and showed gas production in a few hours. In plating the stools it was found wise to select those parts which contained mucus and to shake them up in physiological salt solution or bouillon; then to set them aside for a few minutes to allow the coarser particles to subside, and to use one or two loops of the suspension for each plate, being careful not to disturb the settled particles. This method gave, as a rule, 50 to 100 colonies per plate. Plates were incubated for from fourteen to eighteen hours and then every small pearl-gray colony was subcultured to the Hiss medium. The colonies resembling *Bacillus dysenteriæ* were marked with a wax pencil and the plates were kept at a low temperature for a week, daily observations being made for fresh colonies. If the bacillus was not obtained in the first or second fishing all marks were erased and every small colon-like colony was transferred to the semisolid medium. All tubes showing a cloud were disregarded. Those showing a growth only along the track of the needle were stirred with a platinum wire in order to bring out the bubbles of gas which had been formed. The cultures showing no gas production were tested for the agglutination reaction by suspending a few loops of the growth in the semisolid medium in physiological salt solution and adding a known serum of high agglutinating power. The identification of the bacillus by the agglutination reaction was not, however, wholly reliable as there are bacilli which react in high dilutions but which culturally do not correspond to the dysentery bacillus. The speaker laid great stress on the reaction in litmus milk observed over a period of weeks for the final identification of the organisms.

Results of the Bacteriological Examination of the Stools from Cases of Summer Diarrhea, with the Especial Object of Finding the Bacillus dysenteriæ.—Dr. Herman Schwartz read a paper on this subject. He took only those cases of typical summer complaint which were characterized by profuse watery stools with little or no mucus. He first examined the blood of 25 healthy infants for agglutination reactions with *Bacillus dysenteriæ* in dilutions of 1 to 10, 1 to 20 and 1 to 50. These, with one exception, 1 to 10, were all negative. The normal stools of three healthy, breast-fed and three healthy bottle-fed babies were then examined with negative results. The stools from 30 cases of the character as stated above were also studied.

Technic.—The stools were taken by means of double tubes; the anal region being disinfected, the larger caliber tube was inserted about one-half inch in the rectum; the second tube of smaller caliber and longer than the first, was inserted through this larger tube, well into the rectum and the mucous membrane of the latter irritated. This seemed to be the only feasible method of obtaining these watery stools. When macroscopical mucus was present the fluid stool was put into a Petri dish and the mucus fished out and put into bouillon. Otherwise, a few c.c. of this fluid was put into bouillon and then in 13 cases agar plates in the ordinary way made. In the remaining 17, the method used by Dr. Duval was used. In all the 30 cases the results were negative. The blood of these cases was also examined for agglutination reactions (1 to 10—1 to 20—and 1 to 50), with negative results.

Conclusions.—(1) The blood of healthy infants and children rarely contain agglutinins for the dysentery bacillus; (2) the normal stools of infants in the cases examined did not show the presence of these bacilli; (3) that in the cases of typical summer diarrhea with green, watery stools, these bacilli were not present, or if present, must be in exceedingly small numbers; (4) the serum from these cases of summer diarrhea showed no agglutinins for the dysentery bacillus; (5) from the results of these observations, it would seem that these bacilli are not usually a factor in this class of summer diarrhea.

Diarrhea in Infants.—Dr. Martha Wollstein read a paper in which she described the results of the study, during the three summer months, of 62 cases of diarrhea in infants from two months to two years old, the stools of which had been examined for the Shiga bacillus in the laboratory of the Babies' Hospital. Dr. Grace Dewey had assisted in the work. The material had been obtained from the wards of the Babies' Hospital and of the Foundling Asylum. Of the 62 cases, 47, or 78 per cent., were positive. At the Babies' Hospital the mortality rate was 55 per cent. of the positive cases and at the Foundling Hospital 78 per cent. From stools containing much mucus, with or without blood, the Shiga bacillus was isolated quite readily in most cases. Stools with little mucus and no blood often necessitated fishing of very large numbers of colonies on successive days before any *Bacillus dysenteriæ* could be found. In every instance it was the acid of mannite-fermenting variety of *Bacillus dysenteriæ* which was encountered in this series.

Gastro-intestinal Disturbance in Infants and Children.—Dr. Louise Cordes reported the results of an examination of the stools of 51 patients of gastro-intestinal disturbances in infants and children conducted in

the laboratory of the New York Infirmary for Women and Children, in order to determine the presence or absence of the *Bacillus dysenteriæ*. The material was obtained from unselected cases; even those showing the mildest symptoms were examined. It was, in a good many cases, obtained fresh and plated at once. The *Bacillus dysenteriæ* was found in the stools of 26 cases, two of which were five and ten years old, respectively. In 25 of the stools the acid mannite type of the *Bacillus dysenteriæ* was found. In one the alkaline mannite type. Agglutination as high as 1 to 3,000 and 1 to 3,500 was obtained with the bacillus of the acid type from six cases. The same organisms showed an agglutination with the Shiga anti-dysenteric serum in from 1 to 200 to 1 to 500. The bacillus of the alkaline mannite type gave a positive reaction with the Shiga anti-dysenteric serum in a dilution of 1 to 7,500. With the Harris anti-dysenteric serum a fair agglutination was obtained at 1 to 2,000. The blood of 45 of the patients was tested with the Harris and Shiga dysentery bacillus in dilutions of 1 to 40 or 1 to 50. In ten a positive reaction was obtained.

Etiology of Dysentery and Summer Diarrhea.—Dr. William H. Park reported the results of investigations carried out by himself and Dr. Katharine R. Collins and Dr. Mary E. Goodwin upon the etiology of dysentery and summer diarrhea at the Research Laboratory, the work having been carried on so much in common that a single joint report was made, as follows: In general the results agreed with those reported by Drs. Wollstein and Cordes and differ somewhat from those of Dr. Duval. They had not found the Shiga type of bacilli at all in the ordinary summer diarrheas. Especial attention was paid to the agglutination of the two groups of dysentery bacilli. The agglutination test for the identification of the dysentery bacilli is one to be carried out only with the greatest care. The test properly performed is delicate and reliable, but when carried out with insufficient precautions is misleading. It has been known for some time that the blood of animals before immunization, possessed in moderate amount substances which agglutinate many bacteria. An agglutination of bacteria must, therefore, take place in high dilution of serum before it can be considered a specific reaction. From results obtained in the Research Laboratory Dr. Park considered that even this requirement was insufficient for testing dysentery bacilli. It was found before any inoculations had been made, that the blood serum of certain horses agglutinated, even in such high dilutions as 1 to 1,000, both the bacilli having the characteristics of the true dysentery bacillus of Shiga, and those having the characteristics of the mannite-fermenting class of Kruse, Flexner and Duval. This applied to a less extent to the serum of grown goats and even in a very slight degree to the serum of rabbits. It has happened in some instances that after repeated injections with cultures of one of the varieties of the dysentery bacilli, that the animal's blood agglutinated the variety of bacilli not used in immunization in as high or even higher dilutions than it did the variety injected. It was also found that a serum drawn from a horse which had been immunized by repeated injections of the dysentery bacillus received from Shiga, agglutinated this bacillus in dilutions of 1 to 500. The same serum, however, agglutinated the mannite-fermenting bacillus in dilutions of 1 to 1,000. The serum from another horse which had received injections of the mannite-fermenting bacillus, agglutinated this bacillus in dilutions of 1 to 1,000; but also agglutinated the Shiga bacillus in dilutions of 1 to 500. These two different varieties of bacilli would be judged by these reactions to be much alike in their affinities. Indeed, Shiga and Flexner seem to have made this mistake. Duval and Bassett certainly fell into this error, when they announced in the fall of 1902, that the mannite-fermenting type from the Baltimore diarrhea cases and the Shiga type had identical agglutination characteristics. These varieties are now known to differ completely in this respect. Young animals before immunization were found to be wholly or comparatively free from bacterial agglutinins, and in them we were able to produce an almost pure development of specific agglutinins. A goat six weeks old was found to possess before treatment no appreciable bacterial-agglutinating substances in its blood. After four injections of a culture of Shiga dysentery bacilli, its blood in dilutions of 1 to 500 agglutinated Shiga bacilli, but only in dilutions of 1 to 10 the mannite-fermenting variety. A rabbit, whose blood was negative before immunization, after six injections of this bacillus agglutinated the mannite-fermenting bacillus in dilutions up to 1 to 5,000. The Shiga bacillus was agglutinated only in dilutions of 1 to 20. The slight development of substances which agglutinated the mannite fermenting type during the process of immunization to the Shiga bacillus cannot be considered as showing any affinity between the Shiga type and the fermenting type, as about the same increase was found in animals injected with nutrient bouillon and other substances. It seems that the general employment of immunized horse's serum for differentiating varieties of dysentery and colon bacilli is a mistake. The true dysentery bacilli of Shiga were found in ten cases of characteristic dysentery ocurring in different parts of Mount Vernon and Tuckahoe. These towns are situated just north of New York City. The bacilli were also found in a serious case occurring in the Coney Island district of Brooklyn. The mannite-fermenting bacilli were found in about one-half the cases in the Mount Vernon epidemic, in five cases among workmen on Riker's Island, in two cases at Orange, in one case at Coney Island, and in three cases in New York City. All the above cases exhibited characteristic symptoms of dysentery and differed in no way from cases where the true Shiga bacilli were obtained. In no characteristic case of acute dysentery where suitable material for examination was obtained did they fail to find either the Shiga or the mannite-fermenting type of dysentery bacilli. Besides the characteristic cases of dysentery in which, as a rule, some history of infection was obtained, a large number of cases of summer diarrhea were met with in which excessive mucus, with or without traces of blood, occurred in the stools. In the majority of these cases the mannite-fermenting type of dysentery bacilli were found, although at times in very small numbers. In none of these were the Shiga bacilli discovered. In cases of cholera infantum, no dysentery bacilli of either type were met with. They were also not obtained from the stools of cases of subacute diarrhea in institutions where no cases of the dysentery type existed. The blood from cholera infantum and simple diarrhea cases did not clump any of the dysentery bacilli in the author's collection in dilutions higher than 1 to 10. The Shiga type of bacilli obtained from three different localities were found to agree closely in cultural characteristics, in their agglutination, and in their sensitiveness to a specific bactericidal serum with the cultures of the same type obtained from Shiga (Japan), Duval (New Haven), and Wollstein (New York City). The mannite-fermenting bacilli from the characteristic cases of dysentery and from the cases of summer diarrhea agree in most respects with each other and with the cultures obtained by Flexner in Manila and by Duval in Baltimore. They differ quantitatively and possibly also qualitatively in their reactions to the specific agglutinins ad bactericidal substaces produced in animals after injection of different cultures. From the Shiga bacilli

they differed wholly in their reaction to specific agglutinins and bactericidal substances. The writers believe that it would simplify matters to designate the bacilli identified by Shiga as dysentery bacilli, and the mannite-fermenting, indol-producing bacilli as paradysentery bacilli. The Shiga variety is found rarely, except in the characteristic cases of dysentery or in milder cases associated with them, while the mannite-indol type is found in a moderate number of characteristic cases, but most often in the irregular mucous diarrheas of summer. The relationship between these two groups of bacilli is very similar to that between the typhoid bacillus and the paratyphoid bacillus.

Dr. Park, in the discussion, asked Dr. Duval if he did not think that a serum, such as the immunized horse serum, which frequently agglutinated both types of dysentery bacilli in high dilutions, as well as other bacteria, was dangerous to use for purposes of accurate identification.

Dr. Duval replied that Dr. Park evidently misunderstood his paper; that he identified the organisms culturally and then tested every culture with the sera Shiga and Harris. All his isolations were agglutinated by dysentery serum. The serum he used was that prepared at Philadelphia by Dr. Gay. The horse serum used, agglutinated in dilutions of 1 to 1,000 or more. The main point was to determine first the cultural features, then try the agglutination reaction. If Widal is made first, obtaining positive reaction with the horse serum in 1 to 50, 1 to 200 or 1 to 500, the bacilli cannot be identified as dysentery unless followed out over a period of several days, with special reference to litmus milk, to identify them by their cultural features.

Dr. Libman said that the work reported indicated that the bacilli were found mainly in the cases with mucus or mucus and blood, and that it seemed that every loose stool with mucus was accompanied by the organisms in question. Such a condition of affairs—that is, a constant etiological factor for a pathological secretion—was unknown elsewhere in the body. So that the question arose whether the mucus was not a favorable medium for the growth of organisms which might be present normally, in at least some of the cases. He was aware that the organisms had not been found in normal stools; but a crucial test had not been made. The contents of different parts of the bowel should have been examined in children that had died of non-diarrheal diseases. While he did not wish to doubt the relationship of the organisms in question to diarrheal diseases, a doubt would remain until such studies as he suggested were made. It was possible that organisms which existed normally in the upper part of the bowel might be found in the stools in diseased conditions. Tissier had shown that a dose of calomel was enough to produce a stool full of streptococci in cases where none or very few had been present before. He said he had, several years ago, found in two cases of cholecystitis, bacilli corresponding culturally to the dysentery bacilli. Dr. Libman believed that one could not say that a bacillus which when isolated did not agglutinate with a specific serum was not a dysentery bacillus. One ought to make several tests; for it might be possible that such an organism might react after it had been cultivated outside of the body. He and others had had such experience with the typhoid bacillus. Dr. Libman asked Dr. Duval what his experience had been with the thread reaction; whether he had found it more or less specific than clump reactions.

Dr. Duval replied that his bacillus did not differ from the true Shiga type, except fermenting in mannite. The kind of reaction (end to end or tight clump) depended on the media and serum employed. Sometimes a fresh Shiga culture would give an end-to-end reaction and sometimes the Harris culture would give it. No hard and fast rule could be laid down.

Dr. Park said that in most of the diarrheas with profuse serous discharge bacteria were very abundant. In a dysenteric stool from a man working on Riker's Island, which was almost pure blood, very few bacteria developed.

Dr. S. J. Meltzer wanted to know whether watery stools had ever been examined for their bactericidal effect. Such stools, being transudates from the blood might possess acquired bactericidal power, specific for the organism which is the primary cause of the dysentery. Hence the absence of just this group of bacteria in the watery stools.

Dr. P. H. Hiss said that he had noticed a tendency in the papers read that evening and during the discussion to refer to the dysentery bacilli as of "acid" and "alkali" types, and to speak of "acid" and "alkalin" dysenteries. He thought that it was not scientifically correct to divide these organisms into "acid" and "alkali" types, as both of these types produced acid freely if in the presence of a suitable sugar. So far as he knew, in the presence of proteid and nitrogenous food alone, one of these types would give rise to as much or as little, alkali as the other. It did not, therefore, seem to him correct to speak of an "alkali" producing type, simply because that type did not ferment as many kinds of carbohydrates as the so-called "acid" type. Dr. Park had suggested the name "para-dysentery" for the group composing the active fermenters or "acid" type, in order to distinguish it from the true *Bacillus dysenteriæ* of Shiga. These active fermenters had already been shown to be divisible into two fairly distinct types not only by their fermentation reactions, but by differences in agglutination. In view of these facts and our as yet really limited knowledge of these organisms, and their relation to dysenteries and diarrheas, it seemed early to attempt to name them or at least to mass them indiscriminately under one group name. At present we knew only something of their action on carbohydrates, practically nothing of their action on proteid or other nitrogenous food materials, and the further study which was necessary might lead us to a different conception of the members of the group.

Dr. Park said that prefixing the term "para-" simply separated that group from the Shiga variety, and did not necessarily limit the mannite-fermenting bacilli to a definite group, but left that to the future to decide. Most of the bacilli so far obtained were, however, in most characteristics, similar. Some of the German bacteriologists had used the term "pseudo-dysentery" for this group, but this was misleading. He agreed fully with Dr. Hiss, but said that the terms "acid" and "alkali" were simply terms of convenience, and referred to the appearance of the differentiating litmus mannite medium. He would like to know how Dr. Hiss would designate these organisms.

Dr. Hiss said that he considered it a mistake to adopt short and convenient terms when they were not scientifically correct, and that it would be better to speak of these organisms as mannite fermenters and non-mannite fermenters.

Dr. Herman Schwartz asked Dr. Duval whether he found bacilli in watery stools where no blood or mucus was present, or in true summer diarrhea, and was answered affirmatively.

Dr. Park said that the term "dysentery" was a distinctly clinical term. It referred to an acute infectious disease lasting from one to four weeks, having the distinguishing symptoms of abdominal pain, tenesmus, and frequent stools of blood and mucus with more or less feces and serous fluid. These cases were rarely seen in New York City, but occurred by hundreds in

country towns. It was impossible to examine the mucous membrane of the intestines in these cases during life. From the location of the pain and the character of the stools it was, however, possible to determine pretty accurately the extent of colon and small intestine involved and the character of the inflammation.

Dr. L. Emmett Holt did not think we were much helped in the classification of intestinal diseases by the researches reported. For instance, such cases of colitis as were found by autopsy to have large quantities of pseudomembrane had always been included in the group, dysentery, but were frequently without blood and mucus as clinical symptoms. To exclude them from the classification on this basis seemed irrational.

Dr. Park said that the uncomplicated cases of dysentery outside of hospitals usually recovered in this climate, and when fatal an autopsy could rarely be obtained. The autopsy findings in some atypical hospital cases due to the mannite-fermenting type in which extensive membrane had been present, had been carefully examined by Dr. Howland, whose report had just been read. It was very difficult to determine in these cases what portion of the lesions should be ascribed to the poison of the dysentery bacillus. In these cases no true Shiga dysentery bacilli had been found.

He said that it was a recognized fact that different micro-organisms produced inflammations resembling each other in many respects. Thus, we had syphilitic inflammations of the pharyngeal mucous membrane and also lesions due to Vincent's bacillus, which closely resembled in appearance the lesions of diphtheria. We also had the slighter lesions due to the streptococci. Notwithstanding these facts no one doubted the value of recognizing the most important and frequent infection of this region as diphtheria. The same reasons existed for the term "acute dysentery."

Dr. George P. Biggs said that the term "dysentery" referred simply to a group of clinical symptoms and had no place in pathology.

Dr. David Bovaird said that there were three distinct points of interest in the discussion: (1) He could not tell from pathological lesions which cases were Shiga bacillus infections or were associated with other bacilli. (2) He could not tell from clinical picture which cases were produced by Shiga bacillus and which were not. (3) Nor was the agglutination test alone reliable evidence as to which cases are produced by the Shiga bacilli. Practical workers had no other means than the bacteriological for recognizing these cases. The physician must wait for further information from bacteriologists before making definite distinctions either as to the bacteriological association of these cases, or to the prospect of treatment with specific serum.

Dr. Park said he could judge in what cases dysentery bacilli would be found, as well as he could where typhoid bacilli or diphtheria bacilli would be met with. They would always be found readily in cases of epidemic dysentery and usually wherever acute diarrhea was accompanied by mucus and blood. In cholera infantum they would not be found.

Dr. Schwartz thought it was going too far to say that summer diarrhea was due to the dysentery bacillus. When blood or mucus preponderated the bacilli were found without difficulty; but in commoner cases of summer diarrhea, even if a few colonies were found, one could not say that the dysentery bacillus was the cause of the watery stools.

Dr. Duval wanted to know if with the bacilli in one of the eight colonies from such a case there was reaction with that patient's blood 1 to 50, 1 to 500, 1 to 1,000, and all other organisms in the intestinal tract were not agglutinated, what importance would Dr. Schwartz attach to that finding.

NEW YORK ACADEMY OF MEDICINE.

Section on Orthopedic Surgery.

Stated Meeting, held November 20, 1903.

The President, T. Halsted Myers, M.D., in the Chair.

Dislocation of the Humerus Complicating Obstetrical Paralysis.—Dr. R. Whitman presented two cases illustrating the treatment of this affection. The method which he had employed was similar to that of the Lorenz reduction at the hip-joint. This was preliminary forcible manipulation to stretch the contracted parts and reduction by overextension of the elevated arm which was then slowly forced downward to the side of the body and fixed by means of a plaster bandage. This was retained for several weeks or months and on its removal manipulation and muscle training were if possible begun. In some instances it might not be possible to reduce the displacement at the first attempt. Cases of this character were sometimes classed as true congenital displacement or misplacement of the humerus, but they were in most instances secondary subluxations induced by the habitual attitude of abduction and pronation characteristic of obstetrical paralysis. In certain cases repair of the injury to the nerve trunks had taken place and yet the function was disabled because of the subluxation of the head of the humerus backward which made supination of the forearm impossible. In such instances the correction of deformity might accomplish a practical cure. In the majority of cases of this character the paralysis was irremediable, yet even in this class the reduction of the displacement improved the attitude and function of the arm. The first case was that of a girl, eight years of age, operated upon three months before. The reduction was successful, the attitude was normal, there was a fair range of motion in the joint and apparently no paralysis of the muscles. In this case functional cure was probable. The second case was that of a boy, eleven years of age. The extent of the original injury to the nerves was indicated by the atrophy and loss of growth of the extremity. In this case reduction was difficult, requiring several sittings. Now, about one year after the operation, the head of the humerus appeared to be firmly fixed in its proper position. Although there was but little power of voluntary motion in the joint, the appearance and the function of the limb had been considerably improved by the reduction of the displacement.

Coxa Vara.—Dr. Whitman also presented a case illustrating the operative treatment of coxa vara. The patient was a girl, ten years of age, who had limped for two years and had recently complained of much pain and discomfort. The treatment consisted in the removal of a sufficient wedge of bone from the base of the trochanter to permit the restoration of the normal angle of the femoral neck. A thin layer of bone at the extremity of the wedge formed a hinge, the two opposing surfaces being brought into contact by abducting the limb. In this maneuver the trochanter being fixed by contact with the upper border of the acetabulum further abduction of the shaft closed the wedge-shaped opening. In this attitude the limb was fixed by means of a plaster bandage until repair was complete. In the patient presented but slight trace of the former disability was evident although the operation had been performed in September, the bandage having been removed about three weeks before this meeting.

Dr. V. P. Gibney in the discussion of Dr. Whitman's second case, said that he remembered seeing the operation. He thought at the time, that the stretching had not been done sufficiently well to get the arm far enough back to make the re-position and reduction of the arm where it belonged, absolutely sure. The boy had been

kept at the hospital for a long time. After the removal of the plaster it seemed to the speaker, he had had a little better range of motion than at present. He said all were familiar with the cases presented by the late Dr. Phelps. The open method had been adopted, but he could not quite see how a perfect result could be obtained until the parts could be held in better position and for a longer time than by the present treatment. Dr. Gibney thought Dr. Whitman was working in the right direction, and that by and by a perfect method of treatment for this deformity would be evolved.

Dr. Whitman said that this case was complicated with paralysis and could not be discussed as a simple dislocation.

Dr. Gibney said such cases were called obstetrical paralyses. Later on, other parts were involved. In the case under discussion the head of the bone could be distinctly felt back of the shoulder joint. It was simply a question of terms; many called the condition congenital dislocation. Whether the paralysis caused the dislocation, he did not know. He was as yet unconvinced that it is a true paralysis.

Dr. H. L. Taylor said he judged that these affections were secondary to obstetrical palsy, and should be reduced by a system analogous to that employed in congenital hip dislocation. In this case the shoulder seemed to be in good position. There was subluxation of the end of the clavicle, which was not important, though quite prominent. There is limited use, but, as Dr. Whitman had said, it must be remembered that the arms were more or less palsied, and the getting of the head of the humerus into its socket and keeping it there was certainly an improvement in the child's condition, and an improvement over the cutting operation for getting the arm into position.

Dr. Lesynsky said that he had been very much interested in the case several years ago when he had seen a number of these children. The condition was then ascribed to injury to the brachial plexus, fifth and sixth roots, paralysis terminating in luxation of the shoulder-joint. If the muscles did not undergo regeneration under treatment or spontaneously, there was permanent disability. The speaker was glad to see such good results obtained by manipulation without any other operative interference.

Dr. L. Pierce Clark said that he was very sorry that he could not know more definitely about the cause of this condition, particularly in regard to birth. He thought that these conditions figured as obstetrical palsy due to lesion by stretching the fifth and sixth cervical roots, although there often was injury to other roots. He had palpated the plexus in both cases. He could detect the site of lesion in both. He thought the range of paralysis in the boy was greater in the brachial plexus. He thought other roots could be found damaged far down in the plexus behind the clavicle. In obstetrical palsies the deltoid suffered most because it was most completely supplied by the fifth and sixth cervical roots; then the biceps and supinator brevis. Subluxation of the shoulder was secondary to the paralysis; the atrophy in the deltoid corresponding to the atrophy in the shoulder joint. It is a painful condition, and while operation may enable the muscle to work at much better leverage, nerve section and suture must be done. Kennedy had done the most successful operations of this character recently. The speaker had, during the past year, looked up a series of cases on which Dr. Alfred Taylor had been doing nerve section and suture. The cases had been doing all that could be expected, but much time was required for reparative processes, and they were not ready for presentation, but would be in four or five months. In such operative work as that presented by Dr. Whitman, this operation would not influence the pronation of the hand, because that was done by the supinator brevis. This attitude of marked internal rotation was present, not because the pronators were weak, but because the external rotators had been paralyzed. As the condition gradually improved, the elbow came down to the side and contractions took place. Last in the process was pronation of the hand. He had never seen cases of obstetrical paralysis in which this lesion had been marked, in which there had been entire recovery of supination of the hand under any form of treatment. He said that massage and passive movements were disregarded by neurologists, as the patients never carried out the movements under their own volition. After operation, a series of educational principles had to be carried out, and afterward cerebral training was given. Representations of movements must take their position in the brain. The brain, and not the muscles, must be educated. The speaker thought Kennedy's brachial plexus operations more successful than others, because he applied the cerebral education principle.

The chairman, Dr. Myers, wished to know in how severe cases of these paralyses Dr. Whitman applied reduction. Was it not possible, in some cases, to produce immobilization in this way at the shoulder joint, and so secure more motion of the arm through the less paralyzed muscles acting on the scapula?

Dr. Whitman said he had studied the Hospital Reports carefully in thirty or more cases of obstetrical palsy, and had seen the patients come in, all having the well-known attitude belonging to this condition. There was at first no subluxation present at all; it was the effect of the continued pronation and abduction. For that reason, Dr. Whitman thought passive motions of great importance in order to prevent such conditions as he had shown. Whether there was paralysis or not he thought it better to have the head of the bone in the normal position. Then there was power to supinate the arm. In the case of the little girl, Dr. Whitman thought there would be recovery of function, because the injury to the brachial plexus had been slight, but in the other case there would never be recovery, as the injury had been great, as shown by the atrophy of the muscles. There was complete anchylosis of the shoulder joint. It was better with complete anchylosis to have the head of the bone in its proper place, which was all he had attempted to show. In former times this bad attitude had been allowed to persist, now it was remedied. It was better to do this forcible operation in one, two or three sittings, thoroughly stretching the parts, than to make a section posteriorly without stretching. Whether or not they could be successfully replaced, and whether they would stay in place, he did not know. He did not present them as favorable cases. Thus far the bone had remained in position, and function was very decidedly improved.

Dr. Gibney asked Dr. Whitman whether he did not think it would be better to do an excision of the head of the bone in the boy's case, in view of the importance of having it in its proper place, thus giving the patient a more flexible joint.

Dr. Whitman replied that it seemed to him that the atrophy of the scapula and shoulder muscles was very great. The arm was considerably shorter than the other side. He thought excision would be of little use if there were not sufficient muscle to move the arm about. It was a difficult case at the time of operation, and he was obliged to attempt to replace the bone in two sittings. Had been perfectly contented to have complete anchylosis because the attitude was much better. The boy now had partial supination, he had none before. The

boy had had no treatment after the operation, whatever, except what the mother had been able to give him, in the way of massage, etc. He thought in the reduction of all deformity of long-standing, the operator should not attempt to do what was required in less than two or three sittings.

Dr. V. P. Gibney said that he wished to report the case of a boy, ten years of age, with marked flexion deformity and subluxation of the head of the tibia, presenting a long cicatrix below the patella. He thought it, on first sight, a case of exsection of the joint in early life, and the usual recurrence of deformity that takes place in those cases. He wished it, however, placed on record as malarial synovitis of the knee, or synovitis occurring during malarial attacks, and wanted to bring up the question as to whether it was osteitis or pure malarial synovitis. Dr. Whitman had operated on the boy last Tuesday, doing osteotomy above the condyles. The leg was now quite straight. Dr. Gibney showed a radiograph of the limb and wished to call attention to the curving of the lower end of the femur which takes place in tuberculous lesions of the bone, and have it compared with the sound limb. The history of the case, in brief, was as follows: Boy, ten years of age; entered Bellevue November 22, 1900. Family history negative, save for malaria, which attacked all the members of the family just before the boy's admission to the hospital. Plasmodium had been found in the blood. At the end of November, 1900, the boy began to have chills followed by fever and sweating. This occurred every other day. He would have twenty chills, accompanied by nausea, vomiting and diarrhœa. Always severe frontal headache. No symptoms. Looked well nourished but slightly anæmic. Heart normal, slightly irregular. Temperature 102.2 to 103° F. On December 7 was in good condition and was discharged. On December 9 was readmitted to hospital, suffering from relapse. Arsenic was given. December 11, Warburg's tincture was given. Temperature dropped. Tenderness in right knee and elbow. There joints swollen and stiff. Soda bicarbonate and salicin were given. December 14, very painful. Salicin continued. December 20, condition unchanged. Tenderness most marked at outer aspect of tibia. Inguinal glands swollen. Stools numerous, indication of colitis, etc. January 1, 1901. Joint less tender, stools less numerous. No blood, no mucus. January 8, joint still painful. Marked contraction of the leg. Massage and passive motion given daily. Stools fewer, and more normal in character. January 11, complained of pain in joint. January 18, transferred to surgical division. January 20, joint opened, and cartilage found diseased. Scraped away completely, bones found intact. The quadriceps extensor was cut out to get the patella out of the way. Suture by chromicized gut. Skin suture with silk. Plaster of Paris applied from hip to toes. January 31, patient in good condition.

Specimen found to be the seat of chronic inflammation. No tubercles. March 4, removed plaster. March 5, temperature 100° F. Plasmodium found. March 7, malarial chill 11 A.M., followed by fever 104.8° F. Sweat. Re-applied plaster. March 25, removed plaster, applied splint. Slight fever in knee-joint. April 5, goes about ward pretty well. Runs with slight limp. May 10, discharged. Admitted to Hospital for Ruptured and Crippled November 5, 1903, with deformity described by Dr. Gibney, and shown by radiograph.

Knock-knee. Dr. Gibney also described this case. The patient was a large Swedish woman, thirty-two years of age. The knock-knee was very marked. Very little history could be obtained. On the inner side of the knee what seemed to be a very hard mass appeared, not distinctly outlined. It was suggestive of osteosarcoma, but the diagnosis was not positive and an X-ray was taken. This showed a much elongated internal condyle, and cuneiform osteotomy was done and the limb was brought around in perfect position without difficulty.

Dr. Whitman said that he thought the bending of the lower extremity at the knee not uncommon in flexion deformity so often seen.

Dr. Taylor related the case of an Italian with obliquity of the pelvis. The man complained of backache, and on examination marked pelvic obliquity was found. Short legs were not uncommon but the trouble with this man was that one leg was longer than the other, which was normal. The condition was due to an old disease of the tibia. One leg was one-half inch longer than the other.

Dr. Napier said that unfortunately the patient of whom he could speak was beyond presentation. The case was one he presented at the April meeting of the Section. A boy of fourteen years, who had lateral curvature with some rotation, beginning Pott's paraplegia. After the [illegible] the boy was ordered to bed. At that [illegible] paralysis had somewhat increased. On Tuesday, April 21, a plaster jacket was applied in suspension. The paralysis had then extended along the legs, and was almost complete. There was nearly complete loss of control of bladder control and no movement of the bowels. Temperature normal. The boy was kept quiet. April 22, in the morning, nearly complete paralysis, loss of all power in the arms, very little sensation. Respiratory excursions, temperature normal. During the afternoon, the breathing became difficult. On April 23, at 1 o'clock, he died of paralysis, apparently, of respiration. Dr. Napier reached the house a short time after the boy died. He presumed the case was one of [illegible] poliomyelitis. He wondered whether the concussion of the bones might not have caused the spinal cord lesion, the rapid paralysis.

Impairment of Growth Due to Cerebral Lesion.—Dr. Whitman presented a young woman, seventeen years of age, [illegible] since birth. No instruments were used, but the birth was tedious. Injured arm three inches shorter and forearm one and three-fourths inches less in circumference than the other. Face and chest on injured side much smaller than the other side. Possibly a marked case of so-called birth palsy. If so, involvement came from fifth and sixth cervical because the muscles of the hand were not affected, the extensors more so than the flexors. Electrical reactions normal. Sensation normal. Case puzzling because of extreme failure of growth and the fact that reactions to electricity were normal. The paralysis was of the cerebellar or spastic type, rather than of the spinal type. Less normal. He agreed with Dr. Clark that it was the elevation of the shoulder that was of benefit in these cases.

Dr. Whitman, in the discussion, said in that case there was partial subluxation of the humerus. The patient could put her hands and with the head of the bone in a normal position, she would have the power of supination. In certain cases of obstetrical paralysis there [illegible] employed all of the arm muscles, it was found to be injury of the cords of the brachial plexus, [illegible] After were left with little power in the arm. He thought subluxation required treatment.

Dr. Clark said that some three weeks ago he saw Dr. Witmer's case, to decide upon the feasibility of operation. He noticed the marked facial asymmetry. Since then he has re-examined several other cases of Erb's palsy to see if the non-development of the face was uniformly present on the side of the arm lesion. He has found it present in all where the patient is suffi-

ciently old to give an asymmetry which might come from asymmetric growth. He explained this new condition in Erb's palsy upon the disuse theory: The patient in failing to use the paralyzed arm and shoulder fails also to give the normal impulse to growth in facial muscles and bone. The side of the face on the side of the lesion remains behind in normal growth. In comparing the symmetry of the two sides in unilateral palsy lesions, such as Erb's palsy, a hypertrophied standard is employed on the sound side, just as in anterior poliomyelitis and infantile cerebral hemiplegia, owing to the excess development of the sound side through extraordinary labor thrown upon that side. The close association of the cerebral areas of muscular movements for the face, arm and hand in the motor region of the brain accounts for the face not developing when the arm remains paralyzed from birth—it is essentially a lack of associated voluntary muscular efforts. If on the contrary these efforts should be prolonged over a considerable period of time the face might not only show no non-development, but it might appear normal or even hypertrophied, as the partial palsy would serve to call out more persistent forced voluntary effort, thus calling into play the accessory associated movements in adjacent brain areas functionally allied, such as those for the face, when the arm is being used. During the past year Dr. Alfred Taylor has performed for Dr. Clark a series of nerve section and suture operations upon brachial plexus lesions of so-called Duchenne Erb or birth-palsy type, results of which will be reported later with observations upon the cause, pathology and treatment of the conditions. He can see no good or necessary reason to invoke two nerve lesions to account for these cases. The characteristic symptoms of Erb's palsy, together with palpation of the site of the lesion at Erb's point ought to make certain the diagnosis of birth palsy. Certainly he should not diagnose a cerebral lesion here, neither capsular nor surface hemorrhage, where there are no convulsions, no facial immobility, no spasm or spasticity of muscles, no incoordination nor spontaneous uncontrolled movements, and where the weakness is most pronounced in the deltoid and biceps and not distally as in cerebral palsy, also where there has been no marked increase in the reflex of the facial muscles nor in any of the paralyzed parts. Finally, it must be borne in mind that the labor difficulty causing the two affections is different. In birth palsy as in this case one has imperfect rotation of the trunk; the head is in extreme rotation, the shoulder is caught under the symphysis and the tension and stretching of the fifth and sixth cervical spinal roots results in an attempt to force the delivery by pulling on the head. In cerebral birth palsies the difficulty arises in the delivery of the head; it is compressed and the labor is markedly prolonged and much asphyxia results.

Dr. Witmer said the site of violence to the head might be remote from the location of the cerebral injury. He thought it was not unusual to find hemorrhage of the spinal cord in those cases of birth palsy.

Dr. Elliott exhibited a spinal column from a patient who had had the disease described by Marie. The patient was first seen by Dr. Elliott in 1897; was then examined under anesthesia for diagnosis. He was suffering from acute pain in the coxofemoral joint, with great hyperalgesia. Could not bear the weight of the bedclothes. The hip-joint was found to be anchylosed. The patient was a Russian, thirty-six years old, admitted to Presbyterian Hospital for pain in knee. Came to this country to avoid army service. Had been examined fifteen years previous, and found qualified as to size, for a soldier. On admission to the hospital support and extension were applied to the knee, and the symptoms subsided. In one and a half years he returned with pain in left coxofemoral joint which was anchylosed, gradually extending to the lower part of the spinal column, extending to dorsal and cervical regions, involving right hip, and subsequently the shoulders to a much less degree. Early in history he developed pulmonary tuberculosis. The bacilli were found, and that disease progressed hand in hand with the other. He died from tuberculosis about two months ago. The specimen was almost typical of that first described by Marie in *Revue de Médécine*, 1897. He described two cases almost simultaneously with Bernhardt, almost identical in involvement of the larger joints and the hip, all the small joints remaining intact. The curvature was gradual, the symptoms of pain and hyperalgesia subsided and the man then suffered only from his anchylosed position. Specimen exhibited and anchylosed parts pointed out.

Dr. Taylor, in the discussion, said that he had seen many specimens of stiff spines of this general character, but in those he had seen, the ossification was usually more marked on the anterior ligament, and in the lateral bands rather than the median and often on one side more than the other. Cases of spinal stiffness due to ossification of ligaments or to osteo-arthritis were exceedingly common, but it was only recently that they had begun to be recognized. In Marie's cases the large joints were involved, but there might be osteo-arthritis of the spine not involving the large joints and there might be osteo-arthritis of the large joints without involving the spine. Sometimes the spine and large joints were affected in succession. Sometimes there was deformity, sometimes not. The result depended largely on the rapidity of the process. If ossification took place rapidly, deformity was not so likely to occur; if slowly, there was equal round-back on both sides, or lateral spinal curvatures also.

Dr. Elliott said in reply to Dr. Taylor's remarks, that in all cases he had seen described under this type the anterior ligaments had escaped, as in this case. There seemed to be two or three different types of stiff spines, and he thought the variety in which the anterior ligaments were involved, was the stiff spine of ordinary arthritis deformans, where not only the large, but small joints were involved, and there was throwing out of deposit. Here there was no such tendency.

JOHNS HOPKINS MEDICAL SOCIETY.

Stated Meeting, held November 16, 1903.

Demonstration of Medical Cases.—Dr. Osler introduced the first patient, who was a man with aneurism causing a protruding tumor in the neck. There was a luetic, but no alcoholic history. The onset occurred two years ago, with pain in the shoulder, swelling of the feet and gradual development of the usual symptoms. Distal ligation of the right carotid was done and the tumor immediately increased in size—a feature quite unique in medical literature. The second case was a woman who showed peculiar mottling of the back and hands. The disease appeared after a mental shock, began with pain and numbness in the foot and was characterized by areas of local cyanosis alternating with livid spots.

Case of Generalized Neuritis from Lead.—This was Dr. Thomas' subject. The patient, a man of forty-six years, gave a marked alcoholic history, but the definite onset of his illness had occurred about two and a half weeks after entering an enamel works. There was marked delirium at onset, increasing weakness and some pain in right shoulder. Distinct blue lines in the gums, complete paralysis below the shoulder, ab-

sence of reflexes, slight dulness of sensation at the periphery, some muscle tenderness, granular degeneration of the red blood corpuscles and an irregular temperature were the features of the case. General lead palsy is a rare condition, only about 12 cases having been reported in the literature.

Dr. Hurd said that in lead paralysis the muscles most used are the ones most affected. In this patient alcohol cannot be eliminated as an etiological factor.

Case of Blastomycetic Dermatitis.—This subject was introduced by Dr. Gilchrist, who said that the disease began seven months ago as a pimple on the right wrist. This changed to a nodule, broke down and formed a papilloma. Later, lesions appeared on the thumb, thigh and face. Pus squeezed from the lesion gave a pure culture of the blastomycelium. This disease, of which there are about 50 cases in the American literature, must be diagnosed from tuberculosis and lues. The clinical features, with a microscopic examination of the pus, make the distinction possible. Treatment consists of potassium iodide internally, curettage and the use of the X-ray.

Metabolism in Pregnancy.—Dr. Slemons read this paper, and reported the results of studies made on four women whose metabolism was followed for about thirty-nine days. The diet was carefully regulated and weighed; all the excreta (including urine, lochia and milk) were carefuly measured, and daily estimates were made of the amount of urine excreted and the total nitrogen and ammonia output. The series showed a definite diuresis just before and just after delivery. All the cases showed a tendency of the mother to store nitrogen during pregnancy and the patient who bore live twins emphasized this tendency. The series also showed that during pregnancy there is a tendency for storing up ingested fluid. The ammonia excretion shows definitely that a fetus in utero causes changes in the mother's metabolism. It drops to normal after delivery and tends to become normal when the fetus dies in the womb. Relative suppression of renal activity explains the changes in the amount of excreted urine during and following labor. The diminution in nitrogen output is probably due to impairment of the kidney cells. The high ammonia output at the time of delivery cannot yet be explained. During the puerperium all the patients in Dr. Slemons' series showed a definite diuresis, except the one who bore dead twins. There was a rise in the nitrogen output, usually beginning about the second day of the puerperium and probably due to regressive changes in the mother. The ammonia fell gradually to normal. The series showed that metabolism tends to assume a non-pregnant type when the fetus dies in utero.

Dr. Emerson said that Dr. Slemons' report is particularly valuable because, in spite of the importance of an accurate knowledge of metabolism, no really good observations exist on which to base conclusions.

BOOK REVIEWS.

Manual of Operative Surgery. By Sir Frederick Treves, Bart., K.C.V.O., C.B., LL.D., A.R.C.S., Sergeant Surgeon in Ordinary to H.M. the King, etc. New Edition. Revised by the author and Jonathan Hutchinson, Jr., F.R.C.S., Surgeon to the London Hospital, etc. In two volumes. Vol. I. Lea Brothers & Co., Philadelphia and New York.

The appearance of this well-known work in revised form will be gratifying to those who have learned to know and admire its previous edition. Considerable changes have occurred in surgical thought and action even in the brief time since this manual first appeared, and the revision has been sufficiently thoroughgoing to make it in its present shape a vital contribution to the literature of to-day. The author's choice of a coadjutor has been most happy, and the addition of Mr. Hutchinson's name to the title page has but increased the dignity and authority of the book.

This volume embraces the general principles of operative surgery, and the operations of general surgery, classed under the headings of the ligature of arteries, operations on nerves, amputations, operations on bones and joints and tenotomy. The two introductory chapters on "The Patient" and "The Operator" are masterpieces, and could be read with profit by every one practicing or expecting to practice the art of surgery. The *x* of the personal equation, the unknown quantity, which, in the patient so profoundly, and in the operator to an appreciable extent, modifies the results of even lesser operative procedures, is discussed with a breadth of knowledge and distinction of manner seldom equaled in modern medical writing. An interesting description of the operating room furniture, methods, etc., of the London Hospital, with numerous photographs, details the embodiment of aseptic principles, as now practised in the land that gave them birth. In this connection it is of interest to note that the author does not use gloves in routine work on clean cases. The remainder of the volume treats of the classical operations in a spirited and attractive manner that should make their study less irksome to students. The illustrations are, for the most part, clear and instructive, but we note with pain that a number of antique cuts, representing coat-sleeved and cuffed hands operating with wooden-handled scalpels, relics of a bygone era in the annals of surgery, have been allowed to remain, and we trust that a succeeding edition will see these anachronistic blemishes deleted from the pages of an otherwise perfect book.

Handbook of Obstetric Nursing, for Nurses, Students and Mothers. Comprising the Course of Instruction in Obstetric Nursing Given to the Pupils of the Training School for Nurses Connected with the Woman's Hospital of Philadelphia. By Anna M. Fullerton, M.D., formerly Obstetrician, Gynecologist and Surgeon to the Woman's Hospital of Philadelphia; Physician-in-Charge and Superintendent of its Nurse School, and Clinical Professor of Gynecology in the Woman's Medical College of Pennsylvania; Late Lecturer on Surgery and Operative Midwifery in the North India School of Medicine for Women. Sixth revised edition. Illustrated. P. Blakiston's Son & Co., Philadelphia.

This cleverly written little book has again been brought in line with obstetrical teaching of to-day, and is intended to instruct nurses in all the details which they are supposed to direct during pregnancy and the puerperal stage, and also covers the instruction in regard to the various emergencies which are so liable to occur in these cases while the physician is absent. It is a very handy edition and although not so complete and full in its information as those who are making this subject a special study might desire, yet it covers the subject sufficiently well for any ordinary obstetrical nurse and contains much information which a mother might read with pleasure and value to herself.

Adenomyome der Uterus. Von Thomas S. Cullen, Hülfsprofessor der Gynäkologie in der Johns Hopkins Universität. Baltimore, Md., Verlag von August Hirschwald, Berlin.

In this admirable "Arbeit," which is a part of the Festschrift dedicated to Orth on the twenty-fifth anni-

versary of his professorate, the author gives an excellent discussion of the anatomical and clinical features of a considerable number of tumors of this type which have come under his observation. They are divided into (1) adenomyomata, with relative preservation of the uterine form; (2) subperitoneal and intraligamentous adenomyomata, and (3) submucous adenomyomata. They form a distinct class of uterine growths, in which detached portions of practically normal uterine mucosa are found in the midst of areas of myomatous hyperplasia. They occur both in the body and cervix; the submucous variety being the least frequently observed. Attempts to establish an etiological relationship between conditions in the adnexa and this type of new growth have failed. The clinical history does not essentially differ from that of simple myoma and the physical examination also is usually not characteristic, except that a tendency to the early formation of adhesions is noted. The prognosis is good in so far that adenomyomata are not malignant growths, but a case is described in which carcinomatous degeneration of the glands of the mucosa incarcerated in a growth of this description occurred, and the two conditions not infrequently exist independently in the same uterus. The treatment consists in hysterectomy, as myomectomy is rendered impossible through the diffuse nature of the growth. The dissertation is a scholarly piece of work in harmony with the author's previous pathological studies and is representative of the work done in his university.

The Medical News Visiting List for 1904. Lea Brothers & Co., Philadelphia and New York.

Thirteen years of experience has resulted in the publication of a visiting list which comes as near meeting all the requirements of the physician's daily record and reference book as even the most exacting could demand. It is issued in four styles to suit the needs of all physicians: weekly (dated for 30 patients), monthly (undated for 120 patients per month); perpetual (undated, for 30 patients weekly per year) and 60 patients (undated for 60 patients weekly per year). It is a pocket-sized, wallet shaped book containing a large amount of professional information to which the practitioner so frequently finds it necessary to refer at the bedside. Weights, tables, instructions for examination of urine, incompatibles, extensive table of doses, directions for artificial respiration and a list of diseases and their remedies are among the many valuable things which are of easy access in this little book. It is well printed and bound in flexible leather. It offers a convenient notebook for easily and accurately keeping a physician's office accounts.

International Medical Annual. Under the general editorship of Clifford Allbutt, M.D., F.R.C.P.E. Vol. VII, Issued in May, 1904. Vol. VIII, Menstruation to Orbit. Longmans, Green & Co., New York.

The International Medical Annual we have had occasion to commend to our readers very highly, and in the two volumes here under consideration, we are pleased to note some more than usually interesting and profitable articles. Furthermore, the illustrations which were fewer in the earlier number, are now quite ample.

Of particular interest in the present number is the article on Tuberculosis of the Lungs, written by Dr. R. W. Philip. It is a clear, concise and yet comprehensive presentation of the story. Dr. D. C. Rees gives a singularly attractive discussion of Malaria, presenting a very complete summary of our modern knowledge concerning this disease.

The Physiology and Pathology of the Lymphatic System is well presented, the literature up to the time of the writing of the article being fully discussed. Diseases of the Mammary Gland are very fully discussed, as well as Maternal Impressions and Malingering. The short chapter on the History of Medicine is a very able presentation.

Vol. VIII contains a number of thorough articles; among these may be mentioned those on the Disorders of Menstruation, Mental Deficiency, Micro-organisms, Milk, Education of the Mind, Morphinomania, Diseases of Muscles, Nephritis, Neurasthenia, Occupation Neuroses and Obesity. This latter chapter, while short, is very practical.

Certainly this series is deserving of the highest commendation and the handiness of the volumes, good mechanical execution, as well as the intrinsic quality of the articles contributed, all combine to make this Encyclopedia a valuable one and one worthy of representation in every practitioner's library.

The American Illustrated Medical Dictionary. By W. A. Newman Dorland, A.M., M.D., editor of the "American Pocket Medical Dictionary." W. B. Saunders & Co., Philadelphia, New York and London.

As there are a number of medical dictionaries on the market it must be a source of gratification to the author and publisher that a third edition of Dorland's Medical Dictionary should be called for within a few years after its original publication. As in previous editions, the book is excellently printed and very practically bound in full flexible leather. The revision for the present edition led to the introduction of a large number of new terms, and there is evident a commendable purpose to keep the book thoroughly up-to-date. Medical lexicography, an almost uncultivated field twenty-five years ago, in America, has become in recent years one of the fruitful departments of our medical literature.

Clinical Pathology of the Blood. A Treatise on the General Principles and Special Applications of Hematology. By James Ewing, A.M., M.D., Professor of Pathology in Cornell University Medical College, New York City. Second Edition, Revised and Enlarged. Illustrated with 43 Engravings and 18 Colored Plates drawn by the author. Lea Brothers & Co., New York and Philadelphia.

Dr. Ewing's book has proved itself to be one of the most practical manuals on the important subject which it treats. In the consultation of the work there is the constant feeling that nothing is added for the sake of appearance nor for padding, but that all phases of modern hematology are treated from the standpoint of a practical pathologist, whose aim has been to help the clinician. A well-directed and determined effort has evidently been made to have the book thoroughly up to date, and for this purpose some paragraphs with regard to the bacteriology of the blood in pneumonia, sleeping sickness, granular degeneration of red cells, and leukanemia have been added while the book was going through the press. In order to bring the present edition up to the level of recent progress, references have been made to about four hundred articles or monographs. For those who are interested in special features of pathology, or who are looking up questions in detail, the very complete bibliography cannot fail to be of great service.

In general, it may be said that this is one of the recent American medical publications that gives assurance that at last we are in our medical text-books attaining the standard set for us by great European authorities.

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ORIGINAL ARTICLES.

PREDISPOSITIONS TO TUBERCULOSIS.*

BY JOHN B. HUBER, A.M., M.D.,
OF NEW YORK.

THE Koch bacillus is, of course, the specific cause of tuberculosis. It will, however, be referred to but incidentally in this paper, which is upon predispositions to that disease. I shall divide the subject rather roughly into three parts. First I shall consider certain hereditary factors; then such factors as prove pernicious in the period between conception and birth; and finally postnatal predispositions.

It is pertinent to the trend of this paper to repeat the much-quoted statement that life is the continuous adjustment of internal relations to external relations. This very inadequate definition nevertheless emphasizes the position in which the organism is placed with regard to its environment. And it is in this broad aspect that I am about to consider the effects of external phenomena upon the economy with reference to a disease which, according to autopsy reports, leaves its imprint, in greater or less degree, upon more than 90 per cent. of humankind.

And I shall not be content to examine only into such predispositions to tuberculosis as may obtain in the time between birth and old age. I shall recognize the tremendous importance of prenatal influence. Indeed, the divisions of this subject which I have made are purely arbitrary; for at conception older cellular elements are but transmuted into a new cellular combination; nor is birth more than another step in a series of life processes.

It is not merely a fancy of the romancer, but a statement saturated with practical sense, that the past lies upon the present like a dead giant's body, so that it is as if a young giant were compelled to waste all his strength in carrying about the corpse of an old, an atavistic giant. We sleep in dead men's houses, bacillus-ridden as they are; we are sick of dead men's diseases; we live in dead men's lives; as these sentiments are taken from a dead man's book. And it is equally true that future generations must inevitably be affected by the disposition, physical or otherwise, of the lives of individuals in the present.

With regard to heredity in general it would seem that one may assume almost any position, and will be able to set forth many unquestionable facts in support of the stand he takes. In considering the heredity of tuberculosis we come upon a wide range of positions, from that of the transmission of the disease itself, to the declaration that tuberculous parents actually confer upon their offspring an immunity to the disease.

Since the demonstration of the Koch bacillus, and up to very recently, it has been generally agreed that only a tendency to the disease, a vulnerability, and not the disease itself, a soil predisposing the organism to tuberculosis, may be transmitted. These expressions are vague, from a scientific viewpoint, and it would be desirable if they could be made to express some definite condition.

There are certain signs by which this hereditary tendency to tuberculosis may be manifested. Chief among these is what I venture for the present to call the scrofulous temperament. The scrofulous child has a pallid skin and flabby flesh; there is often chronic blepharitis; phlyctenulæ are frequent; the nose is large and broad and acne-studded; there are nasopharyngeal adenoids and hypertrophied tonsils, so that these children are mouth-breathers, starved for oxygen. There are tedious inflammations of the mucous membranes—coryza, congested and unhealthy throats, and bronchitis exceedingly rebellious to treatment; there are persistent adenitis and periadenitis, the lymphatic glands becoming enlarged and remaining so. There is a sluggish, torpid metabolism. Altogether, there is evidence of a radical nutritive disturbance.

Besides struma, we find thoracic malformations, narrow chests, lacking also in depth, projecting shoulder-blades, and small respiratory muscles. There are emphysema and an evident capacity for breathing below the average. There is, again, defective development of the circulatory system, especially of the aorta; there are congenital heart-lesions, and the heart is small. There are anemia and chlorosis. Among other manifestations there are—slow teething and deficient ossification in children, infantilism, stunted growth, and defective genital development.

It is evident that among these signs of hereditary transmission some are of an anatomical sort, while others are functional in character. This is an important distinction from the viewpoint of practical therapeutics. For it is a well-defined law of heredity that functional rather than anatomical modifications are transmitted; at any rate the latter are consequent upon the former, the development of any organ being regulated by exercise of that organ.

Functional modifications may indeed be unaccompanied by anatomical stigmata; the former may be exaggerated through successive generations without giving a hint of their existence, until the stimulation of some exciting cause, as a traumatism or an intoxication, may bring them to light. Thus it is that many having seemingly vigorous frames nevertheless succumb to the on-

* Read before the New York Academy of Medicine, October 1, 1903.

set of the tubercle bacillus and its allied micro-organisms.

This fact should appeal to those who would claim, from an absence of demonstrable anatomical lesions, that there is no such thing as hereditary transmission. Tuberculous parents may not bequeath definite stigmata; nevertheless they often do impart a pernicious nutritive habit to their offspring. For instance, the latter may suffer because of insufficient respiratory activity. This would certainly occasion deficient oxygenation, so that there would result a lessened vigor of cell-regeneration and of connective-tissue formation, an imperfect metabolism, and the like—a condition of things pathological enough, yet in its incipiency at least non-microbic—a condition non-infectious, but cordially inviting infection.

Moreover, in examining these indications of a transmitted vulnerability to tuberculosis it is worthy of note that many of them are distinctive also of other affections in which heredity plays a part, such as insanity, alcoholism and syphilis. Insanity and alcoholism, non-microbic affections, are often correlated with tuberculosis; and there are not a few analogous features between the latter and syphilis. The conclusion then would seem warranted that in all such affections, tuberculosis as well as the others, there is a like degenerated condition of the organs and tissues, which makes them fruitful soil for microbic germination.

When we come to consider the period between conception and birth we find that specific congenital infection by the Koch bacillus undoubtedly exists. Tubercles containing the bacillus have repeatedly been found in the stillborn. The bacillus has been found in the seminal vesicles in the male, in the female tubes, and in other tissues concerned in reproduction; the bacillus and its toxins have been found in the semen of infected animals. And a conclusive simile may be adduced from undoubted congenital infection in syphilis, smallpox, glanders, cholera and pneumonia.

Still, these infections are comparatively rare; Frebelius has found tuberculous lesions in but 416 out of 16,580 autopsies upon sucklings; and Ballantyne holds that the placenta acts excellently as a sifter to protect the fetus from infection. What is probably much more frequent is a susceptibility to infection in the tissues of the embryo and fetus. Here the parental condition at the time of conception is an important consideration. Roger cites a case of parents of uncommon strength, who had three children. The firstborn and the youngest were very well constituted and had inherited the strength of their parents; the second, conceived at the time when his father was convalescent from pneumonia, was poorly developed, remained feeble, and at the age of twelve years contracted tuberculosis, from which he died. Similar cases will occur to every practitioner. Bodily or psychic disorders in the parents, fatigue, convalescence after a serious disease, advanced age at the time of conception, causes accidental, or perhaps so slight as to escape notice, or such as may be transitional in the parents, may induce a vicious nutrition, making the organism receptive to infection, tuberculous or otherwise.

During the embryonic period the cells become differentiated and the organs of the body are formed; during fetal life the organs thus formed increase in size and begin to take on their several functions. Throughout both these periods, but especially the former, the organism is most acutely sensitive to environmental impressions—to variations in oxygen supply, warmth, the chemical constitution of the maternal blood, uterine or placental diseases, and the like. When such influences are abnormal, it cannot be hoped that the tissues of the fetus will remain unaffected.

In coming to a consideration of postnatal predispositions, I will revert to certain aspects of struma—the pronounced sluggish metabolism; and the tendency to inflammation of mucous membranes and of lymph-glands, the respiratory membranes and the glands of the mesentery and the bronchi being marked sufferers.

Flick, Wright and others tell us that tuberculosis, a disease dependent beyond doubt upon the presence and the propagation of the Koch bacillus, is always, to begin with, a purely local affection. Tissues which have had their circulation disturbed by traumatism, vasomotor, functional or other disorders, become foci. The extension of the process then depends largely upon the spread of the bacillus from these diseased foci by means of the lymphatics and the blood-vessels. It is likely that the alimentary lymphatic channels are more active carriers than are those of the respiratory tract; and it is considered that the quality of the food ingested is of primary importance.

The idea that pulmonary tuberculosis comes about in the first instance through the inhalation of the Koch bacillus into the air-vesicles is considered erroneous. It is held that the bacillus cannot be inhaled because the function of the respiratory tract anatomically and physiologically is limited to the admission of gaseous substances only; that air is changed in the alveoli not by currents, but by the subtler influence of the law of the diffusion of gases. The main routes by which the lung tissues are invaded are then two: first by way of the alimentary canal, the course being the stomach, intestines, lacteals, thoracic duct, the vena cava, the right heart and the lung; the second route being by way of the bronchial glands to the thoracic duct, the vena cava, the right heart and finally the lung.

The pathologist has, in fact, found very little evidence of primary colonization of the Koch bacillus in the pulmonary parenchyma. There is abundant evidence of primary tuberculosis in the bronchial glands; but these are not, strictly speaking, parts of the lung parenchyma. However, in almost every part of the body, differing

in each individual according to his most vulnerable tissue, there is primary tuberculosis; in the lymphatics, serous and mucous membranes, skin, periosteum, in the intra-abdominal, intra-cranial and reproductive organs, in the nose, throat, ear, tonsils, mastoid and the eye. The place of deposit is not necessarily the point of entry of the parasite. There may be tissues which for many years have latently harbored colonies of bacilli, without setting up symptoms until the advent of some acute cause.

But how explain, then, the frequency of pulmonary tuberculosis, particularly in the apices? The first rib is frequently immovable, so that expansion is restricted; Schmorl has found a furrow running around the upper aspect of the apex, which he attributes to defective development of the first rib. He finds that the bronchial twigs which supply the neighboring parts of the lungs are often crooked, narrowed or otherwise deformed, so as to present a favorable situation for the persistence of catarrh in the mucous membrane. Then Esser points out that in children at least the inflamed bronchial glands often compress the bronchi and also the branches of the pulmonary artery, which supply the upper part of the lung. So that in the apical region there are lessened power of expansion, imperfect aeration and insufficient blood-supply. The pathology of cold is suggestive here; for tuberculosis frequently follows that condition. Cold will produce contraction of peripheral vessels, with pulmonary anemia, the blood being in most cases driven into the abdominal viscera. And anemic tissues present diminished resistance to infection, particularly when the Koch bacillus is the agent. Again the venous blood, bacillus-laden, from the thoracic duct, is first carried through the pulmonary circulation for oxidation before returning to the left heart. The lungs, therefore, bear the brunt of exposure to this infection, and act as a strainer to the general circulation.

The alimentary tract is, then, very intimately concerned in the spread of tuberculosis. It is to be emphasized here that in infants abdominal tuberculosis is more frequent than the pulmonary form; it is striking also that gastro-intestinal diseases are very prevalent in infancy and childhood, and that there is at this time much improper, or unsuitable, or artificial feeding. Carriere finds that in all cases of tuberculosis among children, 30 per cent. are of the lungs, 40 per cent. are of the peritoneum, and that tuberculous enteritis occurs in 20 per cent.; and declares, though too sweepingly, that the nutriment consumed furnishes the sole medium by which infection is accomplished. The germ is often taken in with the food, or from bacillus-laden things such as infants are in the habit of putting into their mouths. Tuberculous excreta from the upper air-passages are swallowed. In the stomach the germicidal properties of the gastric juice are encountered—an ineffectual safeguard, however. If digestion here is impaired or incomplete, the bacillus is passed intact into the intestines; here unassimilated material including the bacilli must occasion intestinal hyperemia. Under these conditions peristalsis mixes the undigested bacilli with the chyle. Then the lacteals and the lymphatics take them up and carry them into the mesenteric glands and the thoracic duct. Those which reach the mesenteric glands are likely to colonize and be carried into the thoracic duct, whence they will reach the pulmonary circulation by way of the vena cava.

It is a pleasure to refer here to Sajous' work on the "Ductless Glands," a patient, altruistic work extending over a period of fourteen years, the first five of which, as he tells us, were spent in futile gropings about. Although this work has received the hearty appreciation of his colleagues, his findings have yet to meet their acceptance. I set down here only certain of his views concerning tuberculosis. Vulnerability to infection, he declares, means insufficiency of the adrenal system and lowered oxidation; when this insufficiency obtains, the functional activity of the spleen and the pancreas and the production of trypsin are correspondingly reduced. The digestive process within the neutrophile leucocytes, which collect foodstuffs in the intestinal canal, is due to the action of trypsin; a deficient supply of proteolytic ferment therefore reduces the efficiency of this process. The protection thus afforded the general system is reduced in proportion; since undigested bacilli are pathogenic bacilli. The path which these leucocytes follow is the villi, the portal system, the right heart and the pulmonary circulation. Thus infection of the lung can occur through bacilli taken up by leucocytes in the intestinal canal.

Sajous further considers that relationship between the adrenal system and the alkalinity of the blood is an important feature in the pathology of pulmonary tuberculosis. In this disease, he declares, there is an insufficiency of alkaline salts; that during the pretuberculous and in the earlier stages of tuberculosis there almost always occurs a very marked loss of mineral salts, "causing one to wonder whether this demineralization might not be one of the mysterious conditions which create the soil for a rapid pullulation of the tubercle bacillus." Trypsin will not act in the absence of salts; and this ferment, according to Metchnikoff, is the active body which in the phagocytic leucocytes destroys the bacilli.

A faulty metabolism plays an enormous part in predisposing the tissues to tuberculosis. The presence in the body of nitrogenous matters in a decomposing or readily decomposable state affords an ideal pabulum for the nourishment and development of micro-organisms and their toxins; and such factors as unwholesome food, bad water and foul air will further an excess of these effete matters in the tissues. Ordinarily such material is limited to the amount which is continually being excreted in the ordinary waste of the body; and if the excretory organs all combine in normal action, this is drawn off from the blood currents

as fast as it is poured into them; so that the stream is kept clean. But if such decomposing matter be introduced abnormally from without, as in habitual infractions of hygienic laws, such as many who contract tuberculosis are addicted to; or if it be generated in abnormal quantities within the body; or if the normal process of elimination be in any way obstructed—a rapid accumulation will take place, so that there will be provided a fruitful soil for the growth of the bacilli and their toxins; more than this, there result ideal conditions for the development of mixed infections, in which the cocci join the bacilli, so that a curable disease often becomes transformed into a fatal one.

We have touched upon hereditary lesions of the heart and blood-vessels predisposing to tuberculosis. An impaired circulation means reduced oxidation, and consequently tissue starvation, particularly in the lungs; for under these conditions the vast capillary system opposes the already weakened cardiac contractions; and the pulmonary structures will not receive even their share of the deficient blood-supply. In this connection Sajous holds that such symptoms as pallor, muscular weakness, a thin, compressible pulse, an undeveloped or slightly dilated heart, anemia, anorexia, coldness of the extremities and habitual hypothermia, point to adrenal insufficiency. We may not agree with him as to the reason for these symptoms; but they do denote an ideal condition predisposing to tuberculous infection.

Chlorosis, an affection frequently related to tuberculosis, is referred variously to lesions of the vascular system, to adolescent disturbances, and to digestive disturbances; in each of these aspects is a relation logically established.

Alcohol certainly stands in a causative relation to tuberculosis. Pulmonary tuberculosis is almost invariably found in persons dying in the course of chronic alcoholism; tubercle of the peritoneum or pleura frequently accompanies cirrhosis; acute miliary tuberculosis finds alcoholics an easy prey. Kelynack finds 80 per cent. of pulmonary tuberculosis in patients dying of alcoholic neuritis; Osler finds a proportion of eight in eleven under the same circumstances. It is declared that pulmonary tuberculosis is more frequent in heavy drinkers than in people of moderate habits in the proportion of three to one. Lancereaux computes that more than one-half the cases of tuberculosis are due to alcoholism; and this, I believe, has been about the ratio in the medical wards of the City Hospital on Blackwell's Island.

It is difficult to explain the effects of alcohol. Like most of the simplest things in life, no definite agreement has ever been reached concerning its mode of working. Some consider that it is a preservative for living tissues as for others, because of the tendency to sclerosis which it furthers. Certain it is that there is no hardier stock than the wine-drinking countries. Others hold that chronic alcoholics are more liable to tuberculosis because of the resulting tissue impoverishment.

The bad effects attributed to alcohol lie largely in the state of affairs which it connotes; unsanitary habits, poverty, lack of nutrition, bad food, ill-ventilated living-rooms, and most of all a condition of the organism exhausted by overwork, in which the reserve force is all that is left to carry on the struggle for existence. Oftentimes alcohol is taken first with a view to keeping a defective economy up to the working point, perhaps in a tuberculous subject, or in one in whom all the conditions are receptive to tuberculosis; alcohol is then taken in increasing amounts to stimulate the flagging energies, thus making a bad matter worse. Some who contract tuberculosis have occupations conducive to alcoholism, such as workers in the liquor trade, barmen, waiters and hotel-servants, people who are thus employed because they are from their physical and moral make-up unsuited for another sort of work.

Poverty, with all that it implies—underfeeding, deficiency of sunlight, defective ventilation, overcrowding, uncleanliness, and bad drainage (which induces damp walls in houses), stands enormously in a causative relation to tuberculosis. Biggs has graphically demonstrated this by means of maps of various sections of this city. Bulstrode submits the death-rate from pulmonary tuberculosis in Hamburg among the several income tax classes (inclusive of the dependents of taxpayers). For incomes from nine to twelve hundred marks the death-rate is 55.4; for incomes of from twenty-five to fifty thousand marks the death-rate is 7.5; a proportion against the poorer classes of nearly eight to one.

I can but indicate a subtle relation which seems to obtain between insanity and tuberculosis. It seems that many in asylums who have tuberculosis contract, or at any rate develop the disease in these institutions. One account states that in 74 consecutive cases of pulmonary tuberculosis, in ages between twenty and sixty-two years, only three had evidence of tubercle before admission to the institution; it is furthermore observed that those who enter an asylum with tuberculosis have little chance of recovery while they are inmates.

The plan of sending tuberculosis patients away from the large cities into the country to enjoy the benefits of fresh air and water, sunshine and good food, is of course ideal therapeusis, yet if the consumptive were to go into farm-life and if he were to adopt habits which obtain in many rural districts, he would never get rid of his disease. Among these habits of life are, I believe: an execrable diet, to which meats other than bacon are practically strangers; canned fruits and vegetables and condensed milk being largely consumed, the fresh foodstuffs—including eggs—being sold for urban consumption; intermarriages through several generations in families living within a few miles square; morphinism; a seemingly innocuous imbibition of stomach bitters, cider, and perhaps other insidious fluids; and the

constipation habit, which if formed in the Winter months, through disinclination to venture to outhouses in the intense cold.

Altitude, temperature, moisture, season and soil may be predisposing factors; these need no amplification. Pulmonary tuberculosis occurs in inverse proportion to the height of a given district above the sea-level.

Tuberculosis is prone to follow upon other diseases, such as bronchitis, influenza and neglected colds; Fanning reports 28 cases in 100 in which pleurisy was antecedent; and 10 cases in 100 in which pneumonia was antecedent. In none of these cases was he able to get a definite history of auto-infection from other parts. Convalescents from the exanthemata, diphtheria and typhoid; and the co-existence of such affections as syphilis, malaria, and diabetes are powerful elements in the growth of tuberculosis. The Koch bacillus finds the sugar-containing tissues of the diabetic an unusually congenial host.

There are a number of trades which may stand in a causative relation to tuberculosis. In the excellent book entitled Dangerous Trades there are nearly sixty such occupations specifically considered.

Among predisposing causes we must include various forms of direct injury resulting in contusions, wounds and lacerations. These traumatisms greatly favor the development of the tubercular infection, but they are not essential; for the Koch bacillus may penetrate the unbroken skin and mucous membranes. It is very likely that traumatisms often result in tuberculosis by exciting nervous reactions.

And this suggests a consideration of the influence of psychism upon tuberculosis. It is difficult to gauge such influence; to compute the extent to which thought can affect the development of a leucocyte, the making of a drop of lymph, or the behavior of an excretory cell. The process is not susceptible of investigation by the microscope or by laboratory methods. Nevertheless it is essential, notably in tuberculosis, that the influence of the mind upon the body be not lost sight of. It is in every one's experience that mental perturbations derange the functions of various organs. Why may not acute shock, such as attends traumatism, or chronic shock, such as accompanies nerve exhaustion, or a protracted play of profound emotions, predispose to graver affections. Fanning indeed specifically states that overwork and anxiety have stood in a causative relation to tuberculosis in 34 per cent. of a series of his cases. And it is an altogether scientific, practical procedure to note that the vaso-motor system is an essential part of the machinery through which thought manifests itself; that passive congestion from any cause makes a tissue susceptible to tuberculous deposit; and that aberrations in the vaso-motor system constitute the likeliest factor to bring about blood-stasis.

Thus have I essayed to sketch briefly a few conditions predisposing to tuberculosis; it were impossible even to mention all such. For we are told that living itself is but the body's response to environmental influences, either physical or chemical in character; and these are about as numerous as are external phenomena. Personally, I would reserve the opinion that the whole of life is by no means comprehended in this statement; still it is valid as denoting the innumerable agencies which may make the organism receptive to tuberculous infection.

We may note, then, in a review of ante-natal conditions that fresh parental blood, and all that it connotes will surely beget healthy offspring, having tissues resistant to pathogenic agencies. Impure blood, and its associations in the parents will result in degenerated tissues in the offspring. This is true for other diseases in which a vicious nutrition is transmitted, as syphilis, alcoholism, epilepsy, asthma, insanity and cancer, as for tuberculosis; there is then no reason why the influnce of heredity in the latter should be ignored.

I am aware that the term scrofulosis, which I have used, is absent from the indices of up-to-date text-books; its manifestations being generally considered under the term tuberculosis. Yet I think that these are by no means synonymous terms. They are not the same disease, simply because they often co-exist. The term tuberculosis is meaningless, unless it implies the presence of the Koch bacillus; and this I believe, is by no means invariably the case in scrofula. This latter term may be unfortunate; but there is none other which represents, as it does, a distinct entity upon which the tubercle bacillus is often, but not always implanted. The scrofulous constitution is sensitive to all irritants and infections, not only to tuberculous infection. Struma is largely a transmitted condition; children are born manifesting it. We may well agree with Duckworth that "the influences by which scrofula has become a permanent element in human society have probably affected several generations in succession." In some cases there is, as we have noted, congenital infection; but in most cases there is no such infection. The parents may transmit an influence by toxins; but toxins cannot generate bacilli. Children are born with the scrofulous temperament, upon which many other factors soon react as complications. Such are unsanitary conditions, as impure air, lack of sunshine, poor food and drink, tenement life and the like. The tubercle bacillus becomes implanted; then skin lesions, abscesses, and enlarged joints follow: the scrofulous child is seldom born with these lesions.

With regard to the disease tuberculosis itself. The Koch bacillus is by no means the only factor to be dealt with. This bacillus has probably had an existence co-eval with man; it is all-pervading; the consumptive emits several billions of it during the twenty-four hours; yet most of us do not suffer from tuberculosis. The whole of tuberculosis is not comprised in this micro-organism, an index of a disease which is the resultant of many factors. Much has been done

for the relief of tuberculous patients; but the discovery of the Koch bacillus has not primarily influenced the treatment of the disease. It were irrational in the last degree to deny that drugs may be useful; nevertheless it is a striking fact that since Koch's discovery in 1881, there has not been one important addition to the pharmacopœia such as would prove directly efficacious against this bacillus. The anti-microbic drugs, which have been given internally with a view to destroying the bacilli, have generally been worse than useless. This is particularly true of those which have been malodorous and have nauseated. And if the ideas set forth in this paper are true, inhalants have been altogether unscientific drugs; and hyperalimentation, whenever it has deranged digestion and disturbed metabolism, has been vicious rather than beneficial in its effects.

Duckworth considers that the discovery of the Koch bacillus has not fundamentally changed the state of affairs. It has, however, and on the whole beneficially; but not always. For, as we have just noted, treatment by antiseptics taken internally and directed only to the elimination of micro-organisms has generally proved deleterious. But Koch's discovery has been beneficial in that it has led to the adoption of such principles of prophylaxis and sanitation as have been found effective against infections generally. The non-drug procedures, although they may have been directed against the bacillus, have nevertheless had their real usefulness in rendering the organism resistant to microbic infection. Our improvement in the treatment of tuberculosis lies, not in the use of any special bactericide, but in our appreciation and adoption of hygienic measures.

If the positions I have expressed as to the parts played by nutriment and digestion are sound, it is evident that the sooner the question of the identity of human and bovine tuberculosis is settled, the better it will be for rational medicine.

We have now several immunizing serums which promise much in the way of rendering the tissues resistant to tuberculous infection; it is heartily and most sincerely to be hoped that all expectations entertained for them will be realized. However these serums will never exceed in value such immunizing agents as fresh air, sunlight, cleanliness, baths, dry-walled, well-drained and well-constructed houses, good food and drink, and a general understanding and dissemination of the laws making for health.

To revert in conclusion to heredity, we may note that as functional rather than anatomical modifications are transmitted, much may be done in the way of education and physical training to eradicate vicious metabolism and tissue-tendencies; of course immediate results will not be expected.

I think, indeed, that the physician should take a very broad view of tuberculosis, a view the horizon of which would extend far beyond the incidents which are termed life and death. For this disease, which leaves its mark upon practically the whole of the race, is an index by inversion of human progress; the latter will advance in proportion as the former becomes eradicated. Descartes was not altogether right when he declared that if the race is ever to attain perfection it must be by means of the medical sciences. However, if the principles of hygiene and prophylaxis were universally grasped and applied, the race would surely be far advanced toward an ideal state.

THE INDICATIONS FOR THE LIGATION OF THE INTERNAL JUGULAR VEIN IN LATERAL SINUS THROMBOSIS.

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In considering the important question as to the advisability of shutting off the internal jugular vein from the general circulation with which it is in relation, in the presence of thrombosis of the lateral sinus, several aspects from which the problem must be viewed at once present themselves. The primary aspect of the subject resolving itself as to the advisability or non-advisability of ligating the vein at all; the opponents of this measure claiming that the procedure presents no features of value, as many cases in which it was apparently indicated have recovered without it. Another reason being that when ligated as a means of preventing infection and this is the practical object for which the operation is performed, it does not attain this end, as the infectious material may be carried into the lungs by the other internal jugular vein. And further, owing to the infiltration of the tissues in its immediate proximity, if often becomes extremely difficult to find the vein and remove the larger portion, while finally and this is the only objection that is at all worthy of consideration, the procedure adds greatly to the gravity of the operation.

While it is to a certain extent true that a small amount of infective material may become distributed through the opposite vein, yet this is of little practical moment if the affected sinus clot be thoroughly removed, the main bulk of the infection which is seriously impairing the health of the patient, being derived from the affected side and the consensus of otological opinion is apparently in favor of ligating the jugular under certain conditions which will be discussed later. While the operation is necessarily prolonged when in addition to the other requisite procedures, the vein and its important tributaries are ligated and exsected, yet compared with the prolonged and often fatal pyemia which may develop should this channel of infection not be removed, the dangers to the individual are not necessarily increased in my experience and the favorable results obtained, more than counterbalance the severity of the procedure at the time of operation. This is shown in the statistics prepared by Koerner, of thrombus of the lateral sinus in which in 42 cases, the jugular was ligated in 26 with 63.4 per cent. of cures, while in the remain-

ing 16 cases, in which the jugular was not ligated, there were only 42 per cent. cured. When the vein was tied before evacuation of the sinus in 19 cases, there were 68 per cent. of cures; when ligated after evacuation of the sinus, 60 per cent. recovered, while in the remaining one case of recovery, the vein was ligated without evacuation of the sinus. The same author has also reported 20 cases with 13 cures in his personal experience and advocates early ligation as a measure for the prevention of the passage of septic emboli into the circulation from the septic phlebitis of the lateral sinus.

Brieger ignores the general symptoms of pyemia in deciding the matter of ligation and considers it only justifiable when local indications exist, the systematic application of the procedure as an integral part of the operation for sinus phlebitis as he considers it, is never justified. Of course this is quite correct, for one is never justified in advocating ligation of the jugular in all cases of sinus thrombosis, but the local symptoms are often indistinguishable and cannot always be depended upon as an aid in determining the matter and to my mind the presence of pyemic symptoms before the sinus has been exposed, in conjunction with any local symptoms that may be present, should all be carefully weighed before determining the procedure to be acted upon, in a given case.

Jansen's experience is also in favor of ligation in the presence of definite symptoms, as in 7 cases where the vein was tied, 6 recovered, while in 8 cases in which the vein was ignored, but 5 recoveries ensued. Habermann holds somewhat of the contrary view and opposes a too arbitrary procedure respecting operation, not only in cases pertaining to ligation of the jugular but even in sinus phlebitis. He bases his belief of non-interference on a case of extradural abscess in the posterior cranial fossa, with a firm thrombus of the sinus and in which the walls of the jugular were quite discolored. He removed the discolored part of the vein but left the thrombus in the sinus undisturbed, yet the patient recovered. As far as the presence of a non-septic, firm thrombus limited to the sigmoid sinus is concerned, I would not of course interefere with the corresponding jugular, as in these cases ligation is never indicated, but when there are the least evidences of septic changes either in the walls of the vessel or in the contained thrombus, with these septic alterations extending to the jugular or passing through this vessel to the extent of producing pyemic symptoms, the jugular vein in my opinion should be ligated and the affected portion excised.

Brieger believes that the ligation is only justified when the thrombus has extended into the vein and cannot be positively prevented from passing toward the heart, although he is of the opinion that the closure of this pathway does not always insure against the escape into the circulation of particles from a disintegrating thrombus, as illustrated in a case under his care of sinus phlebitis, in which he made a low ligation of the jugular, yet pathological changes in the lungs followed the operation. Voss has also observed this late metastatic process after ligation in some cases, but he considers the chances for the patient as much better when the vein is ligatured, while Uchermann maintains that ligation need only be undertaken when the symptoms of pulmonary infarction are beginning to develop. I am not at all in sympathy with this opinion and in cases seen late where the first symptoms of septic changes are evident, although the sinus thrombus has existed for some time, I believe it will be wise to ligate the jugular immediately, the successful results obtained being dependent upon early and prompt closure and obliteration of this avenue of infection.

As pointed out by Whiting, the indications for this procedure vary as to whether the sinus has been exposed or not and if exposed, whether opened by the operator. The most difficult cases in which to determine whether ligation shall be performed or not, are those in which no operation has as yet been performed upon the sinus or mastoid, in other words, the primary ligation before exposing the sinus. This being illustrated by the following case:

J. M., male, thirty-four years of age; never had any trouble with his ears until six months previous to when he was first seen. At that time he developed an acute otitis media of the left side following swimming. The ear was treated with the usual home remedies and the abscess discharged on the third day. The discharge then gradually diminished in amount and two weeks later had entirely ceased, but he then commenced to complain of dull pain over the mastoid which was intermittent, but gradually increased in intensity. His appetite failed, he became anemic and lost considerable weight, frequently being incapacitated for work for several days at a time on account of the pain in his ear and general malaise. Three months later he stated that the mastoid became swollen and a small amount of thick, foul matter was constantly discharging from the ear. At this time he developed a cough and two weeks before being first seen he felt chilly at times and on the slightest exertion would perspire freely, diarrhea alternating with constipation also being present. On examination of the affected ear, there was seen a small perforation of Shrapnell's membrane, through which a drop of offensive greenish pus exuded. The posterior superior auditory canal wall was bulging and the mastoid and occipital region on the same side were edematous, as was also the upper cervical region. The man was markedly septic, his pulse was 130, while the temperature was 104° F., which three hours later, at the time of the operation, had dropped to 99° F.

Although he was already pyemic, it seemed a typical case in which to ligate the jugular as the first step of the procedure and after the usual aseptic precautions this was done low down in the neck, with in addition, ligation of the communicating veins. Two ligatures were used on

the jugular, the upper one being as high as possible and the entire vein was dissected out, considerable difficulty being experienced on account of the inflammatory infiltration of the surrounding tissues. The usual mastoid operation was then performed, free communication being made with the antrum and an enormous amount of fetid pus and necrosed bone were removed. The sinus was freely exposed, opened and contained the purulent disintegrating remains of a previous thrombus which had extended into the upper third of the jugular vein. The entire septic area was removed as far as possible, but considerable haste was necessary on account of the extremely precarious condition of the patient. The usual dressings were applied and after the intravenous injection of salt solution, the patient gradually rallied. The progress of the case was favorable until the fifth day, when the temperature rose to 102° F. and he complained of some pain and stiffness in the neck and a small purulent foci was evacuated immediately below the mastoid. The temperature then declined to normal, although there was a slight rise on the fourteenth day to 101.4° F., when a small abscess developed on the left forearm which was evacuated, after which the patient made a rapid recovery.

While in this case the indications seemed perfectly plain as regards primary ligation of the jugular, such is not always the case especially when the pyemic symptoms are not well marked, or when the vein itself gives no indication of septic or thrombotic changes. But not only in the milder cases but even under the most adverse conditions of purulent phlebitis of the sinus and vein, when metastatic abscesses are present in various portions of the body, a small proportion of these cases recover after extensive operative interference including resection of the jugular. But in those cases in which the infection has extended into the jugular vein and resulted in a suppurative phlebitis in order to anticipate or prevent the dissemination of the septic material, the vein should be ligatured as low down to the clavicle as possible and also a second ligature should be placed high up and the entire vein removed from the neck. Milligan reports such a case in which the internal jugular was ligated then the usual mastoid operation was performed and the sinus cleaned out through the opening of the vein in the neck. The patient promptly recovering. Zaufal also reports a similar case of septic otitic thrombosis of the sigmoid sinus, in which the vein was ligated and the sinus laid bare, recovery occurring in six weeks notwithstanding the development of metastatic abscesses in the glutei muscles and the development of purulent pleurisy. While Ridley records a case of pyemia terminating in recovery, in which he ligated the jugular, evacuated an epidural abscess and removed the purulent contents of the sinus.

The indications upon which one is justified in opening the jugular previous to operation upon the mastoid are principally, the presence of septicemia or pyemia as shown by the general condition of the patient and especially by the presence of a high temperature and rapid remissions even to subnormal, with quick alternations to the high point again in a few hours. In all cases where such a condition is suspected the temperature should be taken at least every hour. Repeated rigors are also observed and may be the first sign noticed. Great value from the diagnostic standpoint should be attributed to this symptom. Metastases of the septic material to the lungs, joints or any portion of the body, clearly indicate operative procedure and in the presence of such purulent collections, no hesitation or palliative measures should be advocated, but immediate ligation of the jugular should be performed, followed by the usual operation upon the purulent collection at its source. Occipital edema though rarely present, is of value when found and in addition to the clearly evident middle-ear suppuration and mastoiditis, would even in the absence of other symptoms indicate the involvement of the jugular and the consequent damming back of the blood in this region. The same may be said of edema of the eyelids of the corresponding side, except one would hardly be warranted in tying the vein unless other corroborative symptoms were also present.

Beginning or well marked neuroretinitis occupies to my mind, the same value as the former as an indication for operation, while tenderness along the jugular in the neck, with the presence of a cord-like sensation under the fingers of the surgeon, is undoubtedly the most reliable local symptom and when such is present in a given case, I would not hesitate to ligate and remove the diseased vein before the mastoid was explored. Chipault advises in these cases, that the more radical the operation the better will be the results and to obtain a complete removal of the purulent foci he ligates the jugular and removes it, then ligates the transverse sinus as near as possible to the torcular and performs the usual mastoid operation, with complete opening of the sigmoid sinus and lavages the parts twice daily. While this procedure is based upon the very sound premises that isolation should always be obtained before evacuation, in order to avoid dissipation of septic emboli, I question whether it is judicious or necessary, in the large majority of cases, to apply a ligature above the knee of the sinus as the establishment of free hemorrhage from this end washes out the thrombus and accomplishes the purpose.

Viereck clearly indicates this phase of the subject when he states that ligation of the jugular in operating for thrombosis of the sinus, is not generally adopted on account of some slight danger connected with it and of the possibility of impeding the outflow of the facial and cranial veins. Therefore its beneficial effects should be demonstrated by large and accurate statistics from which however should be excluded deaths from other causes such as meningitis, cerebral abscess, delayed operation and previous metastases. The use of the ligature is indicated in all cases where

there is danger of pyemic or localized metastases, and its application prevents pyemic infection, with greater safety and assurance, than does simple opening of the sinus. Therefore it ought always to precede the latter, thus preventing any danger of the breaking up of the thrombus and the aspiration of an air embolus.

Of the lesser pyemic symptoms which should be taken into consideration in determining operative procedures, profuse sweating without apparent cause requires mention, while vomiting, anorexia and accelerated pulse rate in conjunction with an otherwise obscure history, may be of service in elucidating an accurate understanding of the individual case. In but one of the three cases herewith recorded was pressure over the internal jugular at the upper third portion of its course, productive of pain.

Jansen operates as soon as it becomes evident that there is septic degeneration of the clot and ligates the jugular without further investigation of the sinus. He reports 6 cases, 4 of whom succumbed. While Eulenstein reports a successful case; Köhler an unsuccessful one and Green states that before opening the sinus, the jugular had better be ligated to prevent displacement of the thrombus and resulting general infection, but the danger of a prolonged operation, or infiltration of the neck from a gravitation abscess through the base of the mastoid, or from periphlebitis, may render ligation inadvisable or impossible. Pritchard also holds to the same opinion, inasmuch as he believes the jugular should first be ligated and when the septic process is far advanced, it may be advisable to dissect out the vein even to the extent of its whole course in the neck. Such apparently heroic measures sometimes saving an otherwise hopeless case. While Church inclines to a somewhat opposite view and believes that it is not necessary or advisable unless the clot is septic or broken down, while if the sinus is filled with a fibrinous clot, ligation is clearly not indicated.

Of the second class or those cases in which the sinus has been exposed but not opened, the indications for ligating the jugular before further operative procedure in the direction of the sinus, are but two in number, the first practically being the one of greatest importance. When in this class, the presence of a clot has been determined by the usual methods and aspiration shows that the lower portion is beginning to disintegrate, one is certainly justified in immediately ligating the vein and I believe this in indicated even more forcibly when septic symptoms of even a minor degree are present, although no emboli have as yet entered the circulation. This was the indication upon which ligation was performed in the following case:

T. G., male, aged thirty years. When ten years of age he had an attack of measles and since then he has had an intermittent purulent discharge from the right ear. At times it would almost disappear and then would discharge profusely following repeated attacks of coryza. While the ear was slightly painful at times, yet it was never severe enough to cause complaint until five months ago, when the discharge gradually diminished in amount and the pain increased in intensity, causing considerable suffering especially early in the morning. Examination showed a slight purulent discharge from the right canal, with an intensely foul odor. There was a small patch of caries on the posterior wall and the mastoid was considerably swollen and tender upon the lightest touch. The occipital tissues and the parts over the upper portion of the internal jugular vein were also in the same condition. There were the physical appearances of sepsis, with cachectic features, coated tongue and a constant diarrhea; pulse 120, temperature 103° F.

Immediate operation was advised and performed the same day under ether anesthesia. The auditory canal was cleansed and a probe passed through the sinus in the wall, well into the mastoid. The usual mastoid operation was then performed, but on account of the extensive destruction of the osseous cortex and cells, the pus and débris were readily removed with a spoon curette. The inner table over the sinus was in part destroyed and from the apparently septic condition of the contained thrombus, it was necessary to ligate the jugular vein, which was done immediately above the clavicle and a second ligature was placed as high up as possible. The vein was then dissected out in its entirety and the smaller communicating veins were ligated as this portion of the operation was proceeded with. The jugular was found to be filled in its superior part with pus and the remains of a broken down thrombus. At this stage of the operation the patient began to do very badly and an intravenous injection of salt solution was given with a most beneficial result, oxygen also being administered during the remainder of the operation.

The sinus was then opened and found to be in the same condition as the vein and the contents were removed, although great difficulty was experienced in releasing the upper end of the thrombus which was still firm. The bone was chiseled away almost to the torcular before free hemorrhage could be established. I believe in this case that the thrombus extended beyond into the lateral sinus of the opposite side. On account of the extremely bad condition of the patient, the parts were rapidly cleansed and packed with gauze and the usual dressings applied. The temperature, low for four days, rose to 103° F., and it was found that there existed considerable pus under the sternomastoid muscle. This was removed and he slowly improved, although the blue hue of the face sometimes observed after removing the jugular vein, remained for nearly two weeks. The temperature then returned to normal until the eighteenth day, when it suddenly rose to 101.2° F. without apparent cause, the incisions both in the neck and mastoid appearing perfectly healthy. It, however, only remained at this level for several hours, then declined and the case progressed through the usual course without

further trouble. When seen, four months later, he had nearly regained his former weight and presented all the appearances of good health.

Possibly this case should have had the jugular ligated as a preliminary procedure to the mastoid operation, as in the former case; the indications being fairly well marked, but on account of a difference of opinion among the medical gentlemen in attendance as to the relative value of the symptoms, the inability to obtain the consent of the patient to an operation involving an incision in the neck until it be found to be absolutely necessary, and the conjoint presence of tertian fever, the malaria plasmodia being found in profusion in the blood, this was not done until the condition of the sinus was ascertained by inspection.

The second indication for ligating the jugular after exposing the sinus, is the presence to the eye of the surgeon of the movements of respiration transmitted to the sinus, the dangers of embolism of air under these conditions and the implied presence of a thrombus entering well into the torcular, warranting the immediate ligation of the vein in the neck before the sinus is opened. This must be extremely rare, and it has been my fortune not to have seen a case in which this phenomena was well marked.

Joachim reported several similar cases, one in which the sinus was exposed and then the vein ligated, but as the case was profoundly septic, death resulted from metastatic pneumonia. The other he reported was operated on in the same way, but a solid clot was present. He believes that statistics show a greater preponderance of recoveries when the jugular has been ligated and considers it the part of prudence to tie the vein, although cases have recovered without ligation of the jugular, even when the lungs had already shown metastatic deposits. In the discussion following the reading of his paper, it was elicited that ligation was the course to pursue in all these cases where septic symptoms were present, as it did not add much to the gravity of the case and it prevented the septic infection from becoming more general. As pointed out by Buck if, upon exposing the sinus, the wall is seen to be ulcerated and purulent fluid and broken down débris are contained in the vessel, it is advisable to stop operative procedures in that direction and ligate the jugular before removing the diseased tissue. If the jugular is tied high up and does not contain a thrombus, no further interference will be necessary, but if the thrombus has extended downwards or if phlebitis be present, a second ligature should be placed as before mentioned and the vein removed.

From the local symptoms, it is not always possible to ascertain that the jugular is infected, as there may be swelling of the neck and even tenderness along the jugular, which may, as pointed out by Brieger, be due to pathological changes in the lymph glands, such a case coming under my observation very recently, in which chronic suppuration of the middle ear was followed by mastoid disease and these symptoms referred to the cervical region were quite prominent. Considerable doubt was entertained however as to their being directly connected with the aural trouble and on performing the usual mastoid operation with exposure of the sinus, the latter was found to be perfectly normal. Forty-eight hours later the condition in the neck was cleared up by the development of erysipelas, which fortunately was a mild attack and no trouble was experienced other than that seen in the usual mastoid case. I think, however, that enlargement of the cervical lymph glands and infiltration of the soft tissues is a very valuable sign indicative of phlebitis and thrombosis of the internal jugular, the condylar and the deeper veins of the neck. This infiltration often undergoes purulent inflammation. In two cases which I have seen, the abscess formation seemed to localize for the time being the process of disintegration and formed a barrier between the lungs and the abscess, by the formation of a thrombus in the lower portion of the vein.

The third group of cases, are those in which the sinus has been opened and a large thrombus extending down into the jugular with coexisting purulent disintegration is seen, but which has not before been recognized. Under these conditions it is practically impossible to remove the putrid mass without dislodging dangerous particles and the indications are perfectly clear to ligate the jugular vein in order to prevent the general dissemination of the septic material.

Another indication for ligation which holds good under the same circumstances, is the presence of a large firm thrombus, filling the sinus and extending well down into the vein. After the sinus has been opened and the presence of such a clot determined, it is manifestly poor surgery to allow it to remain even should no septic or disintegrating changes be present in the given case, and as it is practically impossible to remove it through the opening in the sinus, without the danger of seriously damaging the deep tissues of the neck, it is necessary to ligate the jugular in order to effect thorough removal with the least danger to the patient. As the presence of such a clot prevents the flow of blood and it is necessary to reestablish the circulation, one is perfectly justified even if the presence of the thrombus in the upper portion of the jugular is not recognized, in ligating the vein, whenever it is impossible to produce a free flow of blood after the sinus has been evacuated as thoroughly as possible.

Schwartze, Poli, Grunert, Alderton, Kerr and others have reported cases of interest in this connection, while Eulenstein records an exceedingly instructive case of otitic pyemia, in which ligation of the jugular was performed three days after surgical exposure of the middle-ear cavity, lateral sinus, posterior cerebral fossa and evacuation of a large pus cavity near the jugular bulb. As pyemic symptoms continued after the operation, ligation was considered as a last resort, although there were no symptoms of a thrombosed

condition of the vein; the patient recovering Similar to this was the case reported by Toeplitz, of pyemia, with the development of abscesses in various parts of the body and the complete recovery of the patient after cleaning out the lateral sinus and ligating the vein. While as an example of the extremely serious condition the patient may be in and yet recover, is the case of Ballance's, of a pregnant woman, twenty-four years old, with a severe suppurative otitis, swelling of the posterior canal wall, the presence of granulation tissue and a discharging sinus, double optic neuritis and chills with fluctuating temperature. The mastoid was opened, the jugular was ligated in two places and incised and was found not to contain a thrombus, but was collapsed owing to the obstruction of the blood current higher up. Metastatic abscesses formed in the shoulder, tonsil and leg, there was sinus thrombosis with subdural abscess. Premature delivery occurred and in addition to suppurating tonsillitis, there were two attacks of erysipelas and jaundice.

Cheatle in expressing his views as to the indications for jugular ligation, believes that it is not always necessary in thrombosis of the lateral sinus, with which I am in perfect accord, but to use his words, "If it seems that there is healthy looking clot well below the broken-down area, ligation of the vein is not necessary, but it must be remembered that the presence of even one rigor demands immediate operation." As an example of the third group, or those in which the jugular is ligated after the sinus has been exposed and opened, the following case is presented.

C. Y., male, aged eighteen years. Chronic suppurative otitis media since his fourth year following scarlet fever. Profuse discharge for a number of years with a fetid odor. Has had local non-surgical treatment off and on, but with no lasting results. One week before I saw him he went swimming and within a few hours, the discharge from the right ear practically ceased. The following day he complained of pain over the mastoid, with gradually increasing malaise, anorexia and on the day previous to when first seen, he suffered from chilly sensations. On examination, the mastoid was swollen, boggy and there was slight tenderness on deep pressure along the upper part of the jugular vein. A small amount of foul pus was removed from the middle ear and the posterior superior wall was found to be bulging into the canal. The temperature was 102° F. in the morning and varied from 99.2° to 104° F. during the day.

The following day the mastoid was opened under ether anesthesia and was found filled with foul pus and granulation tissue. Communication with the middle ear was established and a large quantity of necrosed bone was removed. The sigmoid sinus was then exposed and laid freely open, when a clot was found almost completely filling its walls and extending into the jugular vein. Beginning disintegration of the thrombus was evident, so the internal jugular was ligated low down in the neck. The sinus was then evacuated and the entire field of operation was cleansed with bichloride solution, followed by packing with iodoform gauze. The following day the temperature was 101° F. and after the second day returned to normal. The patient made a rapid recovery and after a year's interval, he remains perfectly well with no discharge from the ear.

A number of similar cases have been recorded by McKernon and he considers as indications for ligating the vein after the sinus has been opened, the presence of a disintegrating clot or pus. While he also states that in the presence of marked physical signs of jugular involvement, it is good advice to ligate the vein before opening the sinus above, provided we are sure as to what we are going to find, but in the majority of cases, no positive diagnosis as to the condition of the jugular can be made before the sinus operation.

From the cases of sinus phlebitis both with and without involvement of the jugular vein, that have come under my observation, it has seemed advisable for the best interests of the patient to ligate the vein whenever local symptoms indicating its involvement were present. When the patient presented evidences of sepsis and especially irregular temperature and rigors and when after the mastoid has been opened, the presence of pus was evident in the vessel.

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Changes in the Cornell University Medical College.—Dr. Alexander, Professor of Genito-urinary Diseases, has obtained a leave of absence on account of illness, and this year the lectures upon the surgery of the genito-urinary tract will be given by Dr. Charles L. Gibson.

CHORDA VENEREA.*

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Clinical Definition.—A complication of acute gonorrhea, characterized by intense pain during erections and the bending of the penis in an abnormal direction. This condition is considered a complication of gonorrhea on the premises that an acute, simple or an uncomplicated case of gonorrhea is a specific infectious inflammation of the mucous membrane of the anterior urethra and is limited to the epithelial layers of this membrane, for the reason that this tissue, the epithelium, is the normal feeding ground of the exciting cause of the disease, the gonococcus of Neisser. Therefore any extension of the inflammation beyond the epithelium into the adjacent tissue, is a complication.

Pathology.—The gonococci, usually within twenty-four to forty-eight hours, penetrate the epithelial layers of the mucous membrane and cause the following phenomena to take place in the submucosa: Congestion of blood-vessels; hypersecretion of glandular tissue; diapedesis (exudation of the elements of the blood); phagocytosis; production of embryonic cells.

Congestion of blood-vessels, diapedesis, phagocytosis and production of embryonic cells, interpreted in a general manner, signify infiltration of the tissues of the penis by the contents of the blood-vessels, the red and white blood-corpuscles, serum etc. And in addition to this, there is the formation of fibrinous coagula and embryonic cells. Histologically, the tissues involved are mainly of the dilatable character known as spongy tissue. The shape and average size of the penis can readily be called to mind. Practically, from a mechanical point of view, this organ consists of three cylindrical tubes of spongy, flexible tissue. Macroscopically, they are separate and distinct from one another and placed with their long diameters parallel and in such apposition, that two of the tubes, the "corpora cavernosa" form the base of a triangle and the dorsum of the penis, and the remaining tube, the "corpus spongiosum" through which the urethra passes, the apex of the triangle and the inferior surface of the penis. Microscopically, the tissues comprising the urethra and the three corpora, are intimately enough related to permit an inflammation to extend by continuity to all the tissues comprising them. Especially is this true of the relationship between the urethra and the corpus spongiosum.

Infiltration of a portion of the urethra will cause it to become thickened, friable, lose its elasticity, and, on turgescence of the organ, crack in the area of infiltration, producing a fissure and the symptom of severe pain, that is characteristic of fissures even in less sensitive parts of the body. Infiltration of a portion of the corpus spongiosum will interfere with the dilatability of the consolidated area. On turgescence of the organ, this area will not dilate, and through interference with the circulation, the dilation of the distal portion of the corpus spongiosum beyond it will also be incomplete. The two corpora cavernosa becoming completely dilated and also the proximal uninfiltrated portion of the corpus spongiosum, there will naturally result the physical symptom of chordee, a deflection toward the point of least resistance, which in this case is the partially dilated, uninfiltrated distal portion of the corpus spongiosum, with the consolidated area as the fulcrum. The direction of the deflection is usually downward, as the inferior surface of the corpus spongiosum is the portion of the penis most frequently affected.

The character of the chordee depends upon the amount of tissue infiltrated in depth rather than extent. It may vary in any degree, from the mildest form, which is caused by infiltration of all the tissues of the urethra proper, the epithelium, the submucosa, mucosa and the layer of unstriped muscular fibers, to the severest, which includes the mildest with extension of the inflammatory infiltration of the trabeculæ of the corpus spongiosum, rendering them non-extensible, and the filling of the intrabecular spaces with inflammatory exudation that prevents their dilation during erection.

Etiology.—Anything that will aid the gonococci to penetrate beneath the epithelial layers, as intensity of infection; lack of resistance of the tissues to infection; "traumatisms that do damage to the epithelial layers of the mucous membrane, such as injections destroying the epithelium, misuse of a sharp pointed syringe, clumsiness in use of sharp irrigation nozzles, antrophores, sounds or catheters and especially violence in irrigations."*

Symptomatology.—Intense pain during erections and bending of penis in abnormal direction. The intensity of the pain is so severe, it is almost indescribable; by some the pain has been described as "the sensation of a hot wire drawn through the penis like the cord of a bow" (Valentine). Patients will often tell you that they feel as if they could bite a nail in two. It has frequently led to attempts to break the chordee; that is to straighten the organ by mechanical force, as by placing the penis against a resisting surface and striking it with some object, as the fist, the back of a book, etc. One case often quoted, is that of a patient who placed his penis upon the window ledge and then violently pulled down the sash upon it. Others have attempted relief by intercourse. The effect of such violence is to severely aggravate the already existing inflammatory condition, because of the lessened resistance of the injured tissue to further infection, and the formation of numerous foci of laceration, that may lead to deeper infection and terminate in chronic cavernitis; rupture of the urethra with a fatal hemorrhage, infiltration of tissue with urine, that may be followed by a urinary fistula, septicemia, gangrene of penis, etc. From any of these

* Presented before the Second Annual Meeting of the American Urological Association, at New Orleans.

* The Irrigation Treatment of Gonorrhea (Valentine). Given by him as the causes of cavernitis.

complications, if death does not occur, there will result a deformity of the penis, which will cause impotency from inability to have properly formed erections.

Prognosis.—Statistics not obtainable. Complete recovery is the rule. However, chordee no doubt increases the percentage of chronic gonorrhea, because of the greater possibilities of deep infection caused by this complication. It may terminate in chronic cavernitis and deformity of penis that will be so great during erection as to prevent intercourse, and thus cause impotency. Death from causes previously related under "Symptomatology" may possibly result, when violence is used to straighten the organ during an attack.

Preventive Treatment.—This demands the eradication of the causes of gonorrhea. Realization of the vastness of this branch of preventive medicine, "The Prevention of Venereal Diseases" prohibits any statements on the preventives of gonorrhea, for they would be not only foreign to the object of this paper, but unjust to a subject, whose vital importance to humanity, requires due deliberation and the best thoughts that the scientific and humanitarian mind of man can give.

The working premises upon which the theory of actual treatment is based, are as follows: Chordee, a complication of acute gonorrhea, due to the extension of the inflammation to the deeper tissues of the penis. Acute Uncomplicated Gonorrhea: A specific inflammation of the mucous membrane of the anterior urethra, practically conceived of as a local ulcerating surface, that physical rest cannot be given to, because located in a member of the body, the penis, which, from its nature and function, cannot be placed in a state of absolute quietness; neither can the ulcer be kept free from irritation, because located upon the surface of a canal, the urethra, through which passes an acid excretion of the body; nor can the ulcer be kept surgically clean, because situated in the urethral canal, the configuration and form of which retain the discharge, prevents free drainage, an ocular view of the inflamed surface and direct local treatment. Moreover, the ulceration is so inaccessibly situated and on a delicate mucous membrane, that local application of medicine to the inflamed area is impossible, unless the medicine at the same time comes in contact with the surrounding tissues. Therefore, the severe measures necessary to the destruction of the specific infection, the gonococci, cannot be used without causing greater damage to the surrounding tissues than would compensate for the benefit derived from the death of the bacteria.

In summing up our working premises, the following conclusions are deduced: That gonorrhea, therefore chordee, is a local diseased area inaccessibly situated, the sucessful treatment of which will depend upon one's ability to successfully devise the means of correctly applying to it the recognized principle of antiseptic and aseptic surgery.

The method of treatment to be followed will be limited to any procedure that will improve the constitutional condition of the patient, overcoming the natural obstacles to surgical treatment previously mentioned and, in so doing, aid nature in obtaining rest, surgical cleanliness, reduction of congestion and absorption of inflammatory exudation. The principal means of obtaining the above results, rest, surgical cleanliness, reduction of congestion, and absorption of inflammatory products, I will endeavor to give, and shall attempt to classify under these headings in proportion as they attain their objects, though the difficulty of so doing satisfactorily, can be appreciated, as many of these means serve in varying degrees more than one purpose:

1. Rest, obtained (*a*) through general physical rest, confinement to bed (seldom possible); (*b*) through prevention of erections. This necessitates prevention of congestion and irritation of the sexual organs, their nerves and centers, and will be considered in combination with the second and third classifications.

2. Surgical cleanliness and freedom from irritation obtained, (*a*) through mechanical drainage, meatotomy to extent of three-fourths of the diameter of the urethra, (*b*) through flushing of urethra by drinking large quantities of water, a glass every two hours (no alcohol, no carbonated waters); (*c*) through keeping drainage free, by not applying the cotton or other dressing too closely to the meatus, and by frequently changing it; (*d*) through preventing reinfection from absorption of infectious matter of the discharge that accumulates upon the cotton applied to meatus, by using an antiseptic upon the cotton; (*e*) through always allowing the penis to hang down in order to give the discharge the benefit of gravity; (*f*) through having the suspensory fit properly, that is, support the testicles well, and not constrict the penis near its base, thus interfering with the circulation and by retaining the discharge on the proximal side of the obstruction, endangering the posturethra and, by interfering with circulation of distal side, favoring congestion of the urethra anterior to the obstruction; (*g*) through instructing the patient not to strip the urethra, and thus disseminate the infection and injure the inflamed membrane.

3. *Reduction of Congestion Obtained.*—(*a*) Through regulating the diet, in ordinary cases to extent of eschewing highly seasoned foods and pastry, and causing meals to be taken regularly and eaten slowly. Otherwise, the natural daily diet; including tea or coffee once a day, which does not appear to affect the inflammatory condition adversely, but rather aids it by diminishing the mental depression that frequently accompanies this disease. In severe cases a fluid diet is indicated. (*b*) Through instructing the patient to sleep on a hard mattress with light covering. Not to rest on back, because the abdominal organs gravitating toward the pelvis, by their pressure, will cause congestion of pelvic organs and erection. Prevented by tying a towel about the abdomen and placing the knot in the small of

the back. (*c*) Through instructing the patient to absolutely avoid sexual intercourse, even the loving attentions sometimes deemed essential to wooing; and all scenes, literature and conversation that will evoke licentious thoughts; and by having him empty his bladder at least once during the night. An alarm clock set at about one hour before the usual time of rising, will aid in overcoming forgetfulness. (*d*) Through the administration of oleum santali (pure) c.c. .60 every two hours, until four doses are taken, then c.c. .30 every four hours if posturethra is involved or the dilution of the urine by ingestion of water does not relieve the irritation caused by the acid urine and urinary solids. (*e*) Through keeping the bowels free with magnesium sulphate gm. 3.75 night and morning, thus depleting the pelvic circulation. (*f*) Through instructing patient to avoid getting feet wet and sudden changes of temperature. (*g*) Through instructing the patient to bathe the penis at least twice daily, if not oftener, in water as hot as can be borne. This not only diminishes congestion, promotes phagocytosis and absorption of inflammatory exudation, but frees the glued together meatus and facilitates the escape of the discharge and diminishes the suffering of the patient. If possible, a sitzbath should be taken at night. And if the posterior urethra is involved or erections frequent, in addition an enema of one pint of hot water with one teaspoonful of salt in it, is of benefit, and can be repeated in the morning if necessary. (*h*) Through aseptic irrigations of the urethra twice daily with at least one liter of a hot solution. Intravesical irrigations are indicated, especially if posterior urethra is involved. However, the therapeutic advantages to be derived from irrigations will depend upon the gentleness and skill of the administrator.

Results are advantageous by mechanically rendering the whole canal of the urethra and the inflamed surface, without injury to it, free from the discharge that may produce additional foci for deeper infection, from stimulating the circulation by the heat and friction. This relieves the congestion, aiding phagocytosis and promotes the absorption of the inflammatory exudate. (If the theory is true that large volumes of hot water (110° to 120° F.) when used in the urethra produces a species of artificial edema.) These urethral lavages, by causing a swelling of the epithelial cells, aid in the cure of gonorrhea by retarding the progress of penetration of the gonococci by mechanically obstructing their advance, through obliterating the spaces between the epithelial cells. For, as demonstrated by Finger, Durkler, Rosinsky, Jadassohn and others, the gonococci penetrate the epithelial layers by gliding between the cells.

The ideal solution to be used, is one that will have the power of penetrating the tissues, yet possesses such bactericidal strength that it will kill the gonococci, but not injure the mucous membrane. The newer silver salts, such as argonin, argentamin, protargol, largin, argyrol, etc., at present best fulfil this object. The one to use depends upon the severity and character of the inflammation.

To recapitulate the bactericidal benefit derived from irrigation with a hot solution 110° to 120° F. can be explained on the following theoretical grounds: That irrigation causing swelling of epithelial cells prevents penetration of the bacteria to the deeper tissues. The bacteria thus retarded are more apt to be affected by the antiseptics used. That the mechanical removal of the discharge aids phagocytosis, prevents dissemination of infection; that the heat diminishes congestion, stimulating the circulation and aids phagocytosis. Phagocytosis is nature's method of destroying the gonococci. Irrigation therefore, derives its bactericidal value from placing the gonococci between two fires: The antiseptics of man and the phagocytosis of nature.

The foregoing statements, as previously intimated, are an attempt to classify the general surgical principles and theories useful in the treatment of gonorrhea and prevention of chordee.

The main object, however, in writing this paper, has been to add to these general principles a hygienic detail in treatment, the value of which I believe as yet is only partly recognized and that is massage of the prostate and seminal vesicles in acute gonorrhea. For massage of the prostate and seminal vesicles in acute gonorrhea, the following advantages in treatment may be claimed: In massage we have an efficient method of preventing erections; as a result, the pain of chordee is obviated and congestion, a predisposing factor to the further extension and continuance of the gonorrheal infection, lessened; in massage we have the means of producing a beneficial psychological effect upon the patient. The theory of the treatment is explained to the patient and he is told how the semen is stored in the seminal vesicles until becoming overdistended, they excite the sexual centers and cause erections and ejaculation. And he is then informed that by massage, the overdistention is relieved and the semen expelled, and therefore he cannot have erections. The psychological effect thus produced is often very effective in preventing sexual excitement and is of special service in the case of those whose social life or occupation brings them in contact with women, as for instance, married men. Moreover, as a passing comment before proceeding, in the neurotic, in whom emissions without intercourse are associated with the horrors of the damned, silence on the theories of emissions, an optimistic view of the case and a systematic robbery of the seminal vesicles have their advantages. In massage we have a hygienic method of procedure that no longer necessitates the disordering of the systemic condition with bromides, the monobromates of camphor, codeine, etc. Moreover, in all possibilities we have in it the means of diminishing the percentage of cases of infection of the prostate and the posterior urethra. And in practising massage, we have the immense advantage of early diagnosing the involvement

of the prostate; and, in the frequent examinations of the normal prostate, have the opportunity of training the tactical sensibilities to a degree that their value as essential aids to the diagnosing of prostatic diseases is realized in actual practice as well as in theory.

The premises for the above conclusions are as follows: The sufferer from gonorrhea is accustomed to sexual intercourse, *i.e.*, the active physiological phenomena of the sexual instinct, the secretion of the semen, erections and ejaculation, have become a physiological law that an acute gonorrhea does not interfere with. On the contrary there is an increase in the frequency of erections, in the amount of semen produced, and, if it were not for the cessation of sexual intercourse (a physiological habit), there would be an increase in the frequency of emissions. In other words, as a concomitant of gonorrhea, there is the following abnormal stimulus to the nerves of the sexual organs and centers: (1) The congestion of inflammation; (2) presence and multiplication of gonoccocci; (3) production of toxines; (4) an increase in cell-proliferation; (5) an exposure of the nerve-endings to irritation through destruction of tissue.

In these abnormal stimuli can be found an explanation for the increased activity in the secretory function of the sexual organs that causes an overproduction of semen, and in the presence of the inflammation that prevents emissions in the normal manner, by intercourse and sometimes nocturnal pollutions because of pain, an aid to overdistention of the seminal vesicles and prostate. This overdistention in turn, by increasing the pressure on the already hyperesthetic nerves of the sexual organs, adds to the frequency of erections and the severity of the congestion, both conditions act as hindrances to the successful treatment of the disease.

The protection that the massage at this acute period of gonorrheal infection offers to the posturethra and prostate, is explained on the following grounds: (1) Congestion predisposes to inflammation; congestion is relieved. (2) According to Lydston, of Chicago, the ejaculation of the semen is accompanied by a syringe-like action on the part of the bulbo-cavernosa muscle that will aspirate the semen mixed with the anterior urethral secretion into the posturethra and thus cause infection of the prostate.

The reader of Fuller's* logical and convincing applications of the principles of the mechanics of the heart to the sexual apparatus, will perceive in Lydston's statement, an extension of this principle to the bulbo-cavernosa muscles and therefore a theory of practical utility. If the anatomical facts are recalled, that owing to the curvature of the proximal end of the anterior urethra downward and backward, the glands of Leiter and the crypts of Morgagni, here have their openings directed backward, and on account of the same physical fact, their contents and any inflammatory secretion in this portion of the urethra will gravitate toward the compressor muscle, one will perceive an additional factor (the accumulation of infectious material against the compressor muscle), increasing the percentage of cases of posterior urethritis and prostatitis, this syringe-like action of the bulbo-cavernosa muscles occurring.

Method of Conducting Massage of the Prostate in Acute Gonorrhea.—Patient first voids his urine in ignition tubes. The anterior urethra is then thoroughly irrigated by Janet's method with some hot mild antiseptic solution, such as potassium permanganate 1-6,000, protargol 1-1,000, etc., so as to render it free from the discharge, especially the proximal end previously referred to. Next the bladder is well filled with a solution of the same strength, a small quantity of which, sufficient to relieve the feeling of overdistention is at once voided into a glass urinal and saved for comparison with the remainder, which is retained in the bladder until after the massage is completed, The solution in the bladder mainly serves the mechanical purpose of cleansing the posterior urethra before and after massage and as an aid to massage, by distending the bladder so that when pressure is brought to bear upon it, with one hand, the prostate is brought near the massaging finger. The patient is placed upon the table upon his back, a towel placed under his buttocks, legs flexed and rotated outward, the heel of one foot being placed upon the instep of the other. The index finger of the right hand of the operator (a thin rubber glove is worn) is then well covered with vaseline. During inspiration, the index finger is inserted into the rectum. Then with the left hand pushing down the distended bladder, the prostate and seminal vesicles are thoroughly examined and then gently, not violently, stripped until they are emptied of their contents. In so doing the overdistended and congested seminal vesicles are relieved in a passive manner that will avoid the suction action of the bulbo-cavernosa muscle. Massage being completed, the patient immediately empties his bladder of its contents. And if any infectious matter does enter the posterior urethra from the anterior, or is squeezed from the prostatic ducts affected with an incipient form of prostatitis, it is at once washed out. As an additional protection against infection, the bladder, before dismissing the patient, is again washed with a normal salt solution, or preferably, a 4-percent. boracic acid solution. This injection once more cleanses the urethra and bladder, has some antiseptic value, and is of special service as it prevents the distressing tenesmus that occasionally follows intravesicular irrigations, and is to be avoided.

The frequency with which massage should be practised depends upon the patient's sexual habits and the rapidity with which the vesicles and prostate become distended. Usually once or twice a week is sufficient.

In conclusion, I will state that this paper is the result of a clinical observation of 54 cases of gonorrhea, 20 of which were acute primary gonorrheas and of 10 circumcisions (uncompli-

*Disorders of the Male Sexual Organs (Fuller), page 51.

cated by gonorrhea), 5 of which were massaged to prevent erections. Of the 5 massaged, none were troubled with erections. Of the 5 unmassaged, 3 were. With this number of cases, I consider my experience to date sufficient only to warrant the advocacy of this treatment of chorda verenea in the hope that time and the experience of others will demonstrate its practical utility.

ON THE REFLEX ERUPTIONS OF THE SKIN FROM MORBID ALTERATIONS IN THE MALE URETHRA.*

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The diseased condition of the urethra is often the cause of reflex skin eruptions. In acute urethritis, we often meet with edema of the prepuce with lymphangitis, but these are not of the kind which we have under consideration. The balsamic erythema, which is found as a result of the ingestion of the oil of copaiba or of the santol, is only a remedial eruption and has nothing to do with the urethritis.

The affections of the skin which originate from chronic disturbances of the urethra, are of a reflex nature and can be reduced to herpes and pruritus.

Herpes.—Often a man complains of relapsing herpes progenialis, and he is unable to conceive the reason of the recurrence of the affection. The eruption, vesicular in character, appears suddenly in the form of small vesicles, five, six or more aggregated together, sometimes separated. They usually make their appearance in the sulco balano preputiale, around the frenulum and on the internal surface of the prepuce. Sometimes they will be found on the dorsum penis, and in some aggravated cases the vesicles may appear also on the scrotum. The appearance of the vesicles is preceded and also accompanied with a slight itching sensation. The vesicles are filled with clear serum, and their cover being very thin, easily breaks, and leaves round superficial excoriations, which have a yellowish surface, oozing a thin whitish serum. After five or six days, new epidermic cells are formed and in eight, ten or twelve days the excoriations are perfectly repaired.

It is not the importance of the affection which prompts the patients to seek medical attention, but the unceasing relapses, which cause great trouble.

In some cases the patient, having had suspicious intercourse, is greatly frightened from the possibility of a venereal or syphilitic lesion. Here comes the task of a physician to make his differential diagnosis between herpes and a venereal ulcer, or between herpes and mucous patches. This task, however, is simple and easy, so much so, that the doubt cannot remain long, when we consider the superficial character of the lesions, the arrangement of the excoriations in a round disposition (recalling the vesicles) in a word, the appearance of the excoriation has nothing to do with the neatly cut edges and with the ragged surface of the bottom of the venereal chancre.

I hardly believe that an excoriation from a little crop of herpetic vesicles could ever impose for an initial syphilitic lesion and the doubt cannot last long. Rather an eruption of superficial mucous patches in the internal sheet of the prepuce, or in the sulco balano preputiale, may be mistaken for herpes. Mucous patches, however, are much deeper, as they are true papules, and, furthermore, they are scattered in different places, while the herpetic vesicles, being very superficial, have a tendency to aggregate and coalesce together in little crops. Of course it will be found that mucous patches are associated with general syphilitic manifestations; but we must consider that herpes can be found in syphilitic individuals. In this case the general symptoms of syphilis will tell us that the patient is syphilitic, but will not help any in the differential diagnosis between herpes and mucous patches. It is rather important in some cases to determine the exact diagnosis between the two lesions. Furthermore someone has also advanced the theory that recurrent herpes progenialis has to be considered as a result of a syphilitic diathesis, which I strongly deny.

A very important question is whether the excoriations resulting from herpes may open the door for venereal or for syphilitic infection. In this case we find patients, who, having been infected on their usual herpetic excoriations, refuse to believe the physician, when establishing the diagnosis of an initial lesion, for the reason that they have been quite often subject to herpetic eruptions.

The question of herpes progenialis must be studied from the point of view of its origin, so that we may be able to stop its persistent relapses. When we speak of herpes, we mean a vasomotor trouble, which means an irritation starting from the genital sphere, which through the sensitive filaments of the nerves is carried to the ganglionic cells in isolated ganglia, or to the spinal cord, and, this irritation of sensitive nature is changed in those cells, and from them is carried to the nervous filaments, which regulate the tonus of the blood-vessels. In consequence a hyperemia is produced at the end of the nervous filaments which, followed by exudation, form the vesicles, which we call herpes.

It is possible that vesicles are formed on account of a local irritation as is occasioned in consequence of venereal excesses, neither would I deny the possibility of the staphylococci contained in the vaginal secretion, which in some cases may be the cause of the herpes. But these are not permanent causes, and if capable of producing an herpes once, could not consistently be considered as the permanent cause of the persistency in the relapses of herpes progenialis.

The cause, therefore, must be of a permanent nature. In the beginning of my practice I have

* Presented before the Second Annual Meeting of the American Urological Association, New Orleans.

limited myself to the enquiries of the patients, whether they had suffered any urethral affection, but the reply had been always negative, and I have remained in the darkness in reference to the etiological reasons. Gradually I have adopted the system of making a thorough examination of the urethra and from a large number of patients, who have applied for treatment of herpes progenialis, I have found in every case a condition of chronic posterior urethritis with all its complications.

I cannot refer to each of the single cases under my treatment, it would require a long and tedious report. I will limit myself to a few cases of the most striking character. A man in very good general health came to me for a fresh case of subacute anterior gonorrheal urethritis. This was his second time, some seven years previously he had been affected with another case of a severe nature, which had lasted over a year.

The anterior urethritis very easily yielded to the irrigation treatment with a solution of permanganate of potassium 1 to 1,000. He complained, however, that for years he had been constantly annoyed with herpes, and that as soon as the old vesicles had healed up, new ones kept coming. The examination of the urine showed a few shreds in the first beaker, and some more in the second. The shreds under the microscope resulted of mucine, with many mononuclear and a few polynuclear leucocytes. Some large pavimental epithelial cells, and some amorphous granules of sodium urate. The staining with aniline dyes did not reveal the presence of gonococci.

My diagnosis was that of a chronic posterior urethritis, remnant of the old attack.

In order to see whether any material alteration had taken place in the mucous membrane of the urethra, I passed an ordinary steel sound No. 12, which was easily introduced, but it showed some difficulty while withdrawing it. This was enough to give me the idea, that there was an infiltrated point in the bulbar region of the urethra, a kind of a wide stricture. In removing the sound a little drop of whitish fluid came out like we see in those cases.

For the purpose of washing and sterilizing the urethra I made a deep irrigation with the solution of permanganate of potassium 1 to 2,000. In letting out the solution a mass of thick mucus of stringy appearance came out from the urethra.

From the application of the instrument in the urethra, the patient suffered a recrudescence of the urethritis, and one day after an attack of fever. This of course required the intervention of internal remedies, and quinine was administered, which removed the fever, and cleared also the urine considerably. After a few days I resumed the irrigations with a mild solution of permanganate every two days, but no more mucus was seen. The patient had no more discomfort, and gradually was discontinuing the treatment. The most important feature in the case was that the herpetic eruption had not been seen since. Some three months after he came back with another attack of herpes in the internal surface of the prepuce. I repeated the irrigations with the Valentine apparatus, and after several attempts, another mass of mucus came out, of the same quality like that of the first time. For this reason I began the use of sounds regularly once a week together with the urethral irrigations. Neither the herpes nor the mucus appeared again. Lately his urethra could bear the introduction of No. 15 sound, which was passed once a month.

In my opinion I believe that in his urethra had been formed an enlargement in form of a cul-de-sac, above the bulb, and there some mucous secretion had found its receptacle. The sticky quality of the mucus, and its place, prevented the urine from removing it, by the act of the micturition, and in consequence it had accumulated to a certain quantity. The presence of the mucus, made more irritant by the urine and by its salts, was a sufficient cause to produce irritation on the sensitive filaments of the internal pudendi, and the herpes was the result. In nearly every case of recurrent herpes progenialis in the man, I have found the reason of its persistency in the altered condition of the urethra. In some cases herpes has had its reason of existence in the abnormal condition of the glands of the mucous membrane of the urethra. In some cases I have found the glands of Guerin affected. These two small glands, which are seated on both sides of the urethra underneath the fossa navicularis, have their excretory ducts near to the meatus. The gonococci sometimes find their way from the excretory ducts to the glands, which are affected with chronic inflammation. These glands in this diseased condition can be felt under the exploring fingers like two shots on both sides of the urethra near the frenulum. Although the urethra is nearly well, yet the patient complains of a kind of uneasiness, and an itching sensation near the meatus, toward the fossa navicularis, which compels the patient to squeeze that region, bringing out a little moisture, which relieves the itching. In consequence of this affection I have seen quite often crops of herpes progenialis around the sulco balano preputiale, and on the internal sheet of the prepuce, consequent to the irritation from the inflamed condition of these glands.

It is therefore necessary, in cases of relapsing herpes, to bring our attention to the condition of the urethra and of its glands, which quite often are the cause of the persistence of the herpes.

The pathological anatomy of the herpetic vesicles has not much interest, as it is the same which we find in any other vesicular eruption. It is an exudation of the serum of the blood from the capillaries of the papillary layer, with some mononuclear and a few polynuclear leucocytes, which effused in its meshes finds its way into the layers of the epidermis. The effusion of serum by its pressure detaches the horny layer of the epidermis, which being more resistent is raised up in round shape forming the cover of the vesicle. The size and depth of the vesicles depend

upon the intensity and degree of the hyperemia, which is the direct consequence of the vasomotor disturbance.

The local treatment of the herpes is very simple, usually washing with soap and water, and when dry, the application of absorbent powders, talcum, rice, oxide of zinc, bismuth, etc., afford good results. When there is some necrotic condition of the epithelial cells forming the bottom of the excoriation, I touch up the surface two or three times with a solution from 3 to 5 per cent. of nitrate of silver.

I do not advise the application of salves, which in the sulcobalano preputiale become altered and cause irritation, rather than benefit. I have seen that some physicians have resorted to the circumcision for the purpose of preventing the relapses of the herpes. This operation, however, has never been of any benefit whatever, the herpes instead of coming on the prepuce was coming on the glans and on the skin of the penis. In these kind of cases and for this purpose I consider the circumcision an entirely useless operation.

Pruritus.—Another reflex skin trouble is pruritus, which may affect the anus, perineum and scrotum. In most cases we find these regions affected with eczema, excoriations and rhagades. In these cases I consider the eczematous affection as a secondary one, produced mostly by the action of scratching and rubbing by the patient, in order to stop the itching sensation. The skin around the anus is red, swollen, thickened, like leather, showing excoriated places oozing serum, the folds around the anus are somewhat more pronounced, swollen and when the skin is distended rhagades are found. The irritation from scratching is often spread to the mucous membrane of the rectum causing a mucous discharge.

Those cases are usually diagnosed as pruritus and eczema. Often it is doubtful to which has to be given the precedence; both diagnoses are right, but I firmly believe, that pruritus is the first, and eczema is only the consequence of the wounds and of the irritation produced by scratching.

The cause of pruritus must be looked for in the condition of the urethra, and according to my observations the reason is found in the prostatic region. When the posterior urethra is affected, as a consequence the prostate is also swollen, enlarged and dilated. In many cases the urine is turbid, cloudy, sometimes contains shreds, long, stringy and tortuous, showing their origin to be from the follicles of the prostatic gland.

In these cases the examination of the urethra through a sound is necessary, to ascertain the presence of strictures, and it is also necessary to introduce the index finger into the rectum, to ascertain the condition of the prostate and of the seminal vesicles. In nearly all of my cases of pruritus I was able to find either both lobes of the prostate, or only one lobe, more often the right, swollen, thickened, or bulging up like a cyst. When the prostate is pressed, two or three drops of mucus came out of the urethra, which under the microscope contains the brilliant bodies of the prostatic glands. That mucus results of the chronic inflammation of the prostatic region, coming out of the follicles, is cause of an irritation, which affecting the sensitive nerve fibers, which so numerously surround the prostate, cause the itching sensation.

The nerves of the prostate and of the urethra proceed from the distribution of the pudendus internus, which forms an admirable network of nervous filaments. Moreover, the prostate is entered and surrounded by a plexus, which is known as the prostatic plexus, belonging to the great sympathetic system.

It is therefore clear that any disturbance of this region, affecting the different filaments of the sensitive nerves will be revealed with perversion of the sensitiveness (pruritus), and when affecting the sympathetic system will be revealed with morbid manifestations of the vasomotor sphere, erythema, formation of vesicles, herpes.

Sometimes the effect of the irritation does not remain limited to the locality, but it is carried through the nerve fibers to the spinal centers and from there up to the sensitive ganglia. These are the causes which we find quite often in cases of sexual neurasthenia. Cases of this kind come quite often under the treatment of the general physician, or of a neurologist as cases of simple neurasthenia.

It is my intention to limit my observations to the locality, and to the local pruritus, but I cannot neglect to mention cases of general pruritus proceeding from the same cause. A medical gentleman was under my care only a few days. He had a case of chronic prostatitis in consequence of a neglected blenorrhagia, and he was suffering with an intense pruritus of the anal and perineal region, which was relieved only by massaging the prostate. When he remained without treatment of the urethra and of the prostate, his sufferings were greatly increased, and the pruritus affected the backs of both hands, both arms, both feet and the calves of both legs. The itching was so troublesome, that the gentleman although he tried hard not to scratch, yet during his sleep scratched so severely as to produce deep and extensive excoriations. It is not entirely out the reach of an explanation the possibility of the generalization of pruritus not only, but also of an eczematous eruption, when we recollect, that the skin is a continuous involucre covering the whole body in connection with the mucous membranes, with innumerable vasal and nervous anastomoses. The prostate which is a glandular organ in intimate connection with the urethra, resembles somewhat a chestnut or a heart of the playing cards. It rests upon the aponeurosis mediana of the perineum and on the membranous portion of the urethra. Its upper portion, where the bladder rests is somewhat concave, and is intimately connected with the vesical tunics. Its inferior portion is connected with both deferent canals rest-

ing on the median line. The anterior portion of the prostate is in contact with the upper perineal aponeurosis, and the posterior is separated from the rectum only by the prostatoperineal aponeurosis, in consequence it is so easily felt by the exploring finger introduced into the rectum. It is an organ consisting of strong muscles and glands intimately connected with the posterior wall of the urethra, so that it is difficult to isolate the prostate from the urethra, which is firmly imbedded into its structure. The ejaculatory ducts, which are the continuation of the deferent canals go through the gland obliquely from backward to forward and from externally toward the middle, ending nearly together. The mass of glands forming the prostate ends in 10 or 12 excretory ducts, which open into the urethra on both sides of the verumontanum. In consequence of the spreading of the blenorrhagic process into the glands, we have only rarely cases of general gonorrheal prostatitis, which may end in an abscess with dangerous consequences. In the ordinary cases we have subacute or chronic prostatitis, which is noticed by the patient at the end of the micturition by a painful tenesmus at the time of squeezing out the last few drops of urine. Sometimes these last drops of urine are accompanied with thick mucus, or even with a few drops of blood.

Other times the process is much milder and the patient although annoyed by frequent micturition and sometimes also by night emissions, yet permits the thing to run without medical attention, alleging all the different explanations which the imaginative talent of the patient can only find. The inflammatory process, although of a catarrhal nature, increases the secretion of the prostatic glands, which sometimes oozes out in form of a sticky, clear albuminous fluid, as prostatorrhea, at other times on account of some difficulty to its issue is retained in the glands, causing their dilatation. It is in this way that we find the lobes of the prostate enlarged, and as I have already mentioned, to such an extent in some cases to give to the exploring finger a sensation like that of a cyst. I scarcely need to say that when the glands of the prostate are so inflamed and enlarged the surrounding connective tissues take a hand in this enlargement and in the congestion of the whole organ.

From the above considerations I find that pruritus of the perineum is explained by the irritation produced upon the sensitive fibers of the nerves, which are so abundant in that delicate region, from an accumulation of abnormal secretion, in the lobes of the gland.

Treatment.—It is easy to understand that the eruptions already mentioned or the pruritus will be of persistent character, as the anatomopathological alterations, which produce it are of a permanent nature. The massage of the prostate, or what is more often called the stripping of this gland, is of a great benefit for the reason of removing the secretion from the body of the glands, diminishing the distention. In consequence the massage of the prostate has been rightly recommended as the chief means to relieve this condition of chronic prostatitis.

I would not, however, rely entirely on this simple application, and I find that together external and internal applications are necessary. In my practice I cannot renounce to the irrigations of the entire urethra and bladder, through the Valentine apparatus, using a mild solution of permanagnate of potassium or biborate of sodium, repeated two or three times a week. In case of infiltration, or hardening of the mucous membrane of the urethra, the introduction of a sound covered with salve composed of 25 per cent. ichthyol in vaseline has given in many cases good results. This application, however, cannot be done more than once a week, and the operator must be cautioned that the prostatic urethra when inflamed quite often reacts very severely after one of these applications. For this reason we will advise our patient after the application of the fenestrated sound with ichthyol salve, to remain in bed for several hours, and in case of pains to apply hot water bag on the perineal region. To diminish the disagreeable tenesmus, the administration of the usual remedies as bromide of potassium, hyoscyamus, opium, trional, etc., come very handy and usually beneficial.

Locally the use of the ichthyol has given me the best results to stop the itching sensation and to heal up the results of the scratching, excoriations and eczema. I use my old liniment resulting of ichthyol, 3ij; aq. calcis, olii amygd. dulc., 3iv; aq. rosæ, glycerin, aa 3vj; m. f. linim. This is applied on cotton or English lint, and it is left on for the whole night, in the morning it is washed with a solution of carbolic acid, according to the following formula: Acid. carbolic., glycerin. aa 3j; aq. rosæ, alcohol. aa 3iij. M. ad us. Ext. as washing.

In case of complication of the mucous membrane of the rectum to the eczematous process, I advise my patient to use injections with a very weak solution of borate of sodium, at a warm temperature into the rectum twice a day, and by means of a speculum ani I introduce a small tampon of cotton saturated in 25 per-cent. solution of ichthyol in glycerin which the patient holds in, so long as he can. In my experience, ichthyol has an astringent action upon the prostate and on the vas deferens in case of its complication.

After the excoriations have healed up, and the eczema is improved, the itching sensation has also diminished, I advise the application of an ointment with oxid. of zinc, for instance, the modified formula of Wilson: benzoin, 5; vaselin, 70; zinc oxid, 25. When the skin has returned to the normal condition, the patient will finish his treatment, by bathing the perineum and scrotum with the carbolic acid lotion, and when dry, will cover the skin with rice powder or amylum. In case of presence of strictures, I continue the use of the sound for a long time, according to the feelings of the patient, and to the quantity of mucus, which

comes out after withdrawing the sound. Its application will be repeated every two or three weeks and also once a month, until no more mucus comes out after the application of the sound.

It would be tedious and perhaps useless for me to relate a description of a series of cases of the kind, where I have obtained satisfactory results with the mentioned treatment. I can only state that with patience and perseverance I have obtained with this method gratifying results in cases of many years' standing, cases neglected and left nearly to themselves without rational treatment.

THE TREATMENT OF SOME DISEASES OF THE EYE BY WARM MEDICATED SPRAYS.

BY DAVID T. MARSHALL, M.D.,
OF NEW YORK.

For the past year I have been making use of an old, but seemingly little known, method of treating certain diseases of the eye; namely the use of warm medicated sprays applied by means of a steam atomizer.

The method is simply this: a steam atomizer, such as is commonly used in spraying the throat, is filled with water, the alcohol lamp is lighted and a solution of the remedy indicated is put in the cup.

The patient is seated in front of, and close up to the atomizer, at such a level that his eye looks directly into the tube. When the spray is well started the lower eyelid is pulled down and the patient is directed to hold his eye wide open. The spray is directed alternately into one eye and then into the other, the duration of the treatment being from five to ten minutes. After spraying, the eye may be touched with bluestone or alum stick or applications of drops or ointment may be made as is indicated. These agents seem to act more effectively when applied immediately after the warm spray.

Cases of blepharitis marginalis heal with surprising rapidity after a course of spraying and yellow oxide or other ointment. As this disease is often complicated with, if not really caused by, a conjunctivitis more or less chronic and often trachomatous, it gets well because the conjunctivitis is healed at the same time. In practice it is very difficult to get blepharitis patients to remove the crusts from their eyelids. Unless this is done ointments do not act effectively. The hot spray softens the crusts and they may be removed while the spray is being applied. In this connection I may state that blepharitis cases often do better with ointments other than the classic yellow oxide. I have gotten good results with Lassar's paste, resinol ointment, boric acid ointment and even plain vaseline after yellow oxide in one-half- to one-per-cent. strength had been used for weeks, to no purpose. It is idle to scold the parents of the average clinic child because they fail to remove the crusts from their child's eyes. It is better to make use of a treatment which will cure the child's eyes in spite of the ignorance or carelessness of its parents.

Chronic conjunctivitis responds most satisfactorily to treatment with the warm spray. The spray is soothing and pleasant and patients enjoy taking it. Most cases of conjunctivitis do well under bluestone applied immediately after the spray. I apply it lightly to the lower lid and then let the patient bathe the eyes in a basin of cold water until the acute pain is somewhat abated.

Of all cases in which I have used the spray treatment, the most satisfactory have been some chronic cases of conjunctivitis and pannus, combined with more or less corneal infiltration due to old trachoma. We see many such in the dispensaries in New York. They are found principally among the poorer classes of Russian Jews, many of whom are tailors and work in poorly lighted and poorly ventilated sweat-shops. The plight of these people is sometimes pitiful in the extreme. They are compelled through poverty to work when their eyes are totally unfit to use. Some of them give a history of having had trachoma, with occasional attacks of pannus, for periods varying from five to thirty years.

Where the corneal irritation is due to the rubbing of roughened cicatricial surfaces of the eyelids, little can be done. In cases where the conjunctiva of the eyelids is swollen and succulent, the spray treatment, followed by applications of bluestone, is very effective. I have relieved a number of such cases, which had been treated with bluestone or nitrate of silver for months with no improvement.

Corneal ulcers and infiltrates often clean up rapidly under the spray treatment.

A method of treating chancroids by means of a weak spray of peroxide of hydrogen, applied by means of air at a pressure of 60 pounds to the square inch, has recently been suggested. I believe that a warm spray of a suitable solution applied with considerable pressure would favorably influence a corneal ulcer, but I never have tried it.

The pressure of the warm spray as it issues from the tube of the atomizer is practically inappreciable, but it cleans out an ulcer effectively.

Summary.—Spraying with warm medicated sprays is indicated in almost all diseases of the conjunctiva, as acute catarrhal, chronic, epidemic, gonorrheal, trachomatous and phlyctennular conjunctivitis; in diseases of the cornea as ulcer; infiltration and interstitial keratitis, and in iritis.

33 West Twelfth Street.

Isopral, a New Hypnotic.—Isopral, a chlorated propylic alcohol, forms a crystalline body readily soluble in water, alcohol and ether, and possesses a camphoraceous odor and aromatic pungent taste. Its physiological action has been carefully studied by D. Impens (Therap. Monatshft., Sept. and Oct., 1903), who finds that while less poisonous than chloralhydrate, it resembles this in action and is at least twice as efficient. Cardiac depression is less marked, respiration is only affected with tonic doses, and locally it possesses distinct anesthetic properties, though irritating at the same time. In doses of 0.5 to 0.75 gm. (8 to 12 grains), it is as efficient as chloral and it has no after-effects.

MEDICAL PROGRESS.

PHYSIOLOGY.

Mechanism of the Absorption of Cocaine Injected into the Spinal Canal.—The anesthesia following rachidian injections of cocaine, according to A. Valenti (Arch. Ital. de Biol., Sept. 10, 1903), is to be attributed exclusively to this alkaloid, which, remaining for a long time dissolved in the spinal fluid, acts locally upon the origins of the spinal nerves, paralyzing their sensory fibers. The secondary postoperative phenomena, analogous to those of acute cocaine poisoning, depend upon the toxic action of the alkaloid, which, on account of the late absorption by the lumbosacral arachnoid, passes very slowly into the circulation. It will require further researches to establish the fact, whether the very slow absorption of cocaine in these conditions, might not have a special influence upon the intensity of the toxic phenomena, which, following the hypodermatic injection of corresponding doses, seem to be less constantly manifested.

Macroscopic Modification of the Blood Preceding Coagulation.—A new phenomenon, visible to the naked eye, has been observed by V. Ducceschi (Arch. Ital. de Biol., Sept. 10, 1903) in a few drops of blood obtained from the finger-tip, and placed in the center of a watch-glass; after inclining the latter repeatedly at intervals of several seconds, and then holding it up to the light, there are noticed in the depth of the blood next to the glass a number of very fine whitish points or granules contrasting markedly with the blood. These appear within from forty seconds to two minutes after the blood is removed from the body, and rarely later. The granules usually have a diameter of from ¼ to ½ mm., and are no longer visible when coagulation sets in. Mixing the blood with an equal quantity of a one-per-cent. solution of ammonium oxalate prevents the formation of the granules. If the granulations be placed on a slide, dried in the air, fixed with a mixture of alcohol and ether and stained with one-per-cent. methylene blue, they acquire a diffuse blue color containing small prints of a deeper blue. The surrounding red blood cells have a greenish hue. Under the high power of the microscope, the bluish masses are recognized as clumps of blood-platelets, more or less altered, and of a smaller number of leucocytes whose nuclei stain much more distinctly than the platelets. If the granules be examined during the early stage of their formation and while they are rather small, it will be seen that there is little or no fibrin; the entire phenomenon, therefore, is one which precedes coagulation. If a beaker be nearly filled with the fresh blood of a rabbit, it will be observed that the granules form not only at the bottom, but also along the side, provided the blood be kept in motion by inclining the beaker several times; in blood which has been kept perfectly quiet the granules appear in but scant number. It is well known that the blood-platelets have a tendency to adhere to surfaces other than those of the normal wall of the blood vessels, and to gather in clumps. This phenomenon may be regarded as genuine agglutination, and is held by some authors as distinct, morphologically and physiologically, from coagulation. It will be interesting and perhaps of practical value in clinical medicine, to investigate the possible variations of the above phenomenon in various morbid conditions, inasmuch as a few investigators have observed marked oscillations in the number and even the complete disappearance of the platelets in various diseases.

Corpuscle of Poggi in the Hematopoetic Organs of the Premature Fetus.—Poggi deserves the merit, according to G. Zirolia (Arch. Ital. de Biol., Sept. 10, 1903) for having been the first to discover in the blood of anemics, a corpuscle which has the property of staining freshly with methylene blue, and which the discoverer regards as an immature element or one which has precociously escaped into the circulation. This belief is based upon the fact that the corpuscles of Poggi are normally found in large quantity in the bone-marrow, the seat of the manufacture of red-blood-cells. The author has demonstrated that they are also found constantly in the hematopoetic organs of the premature fetus of man and the other mammals. The presence of these corpuscles in embryos which have not arrived at maturity or which do not attain extra-uterine life, or which have lived but a short time in the uterus, in a small proportion in the bone-marrow, and in a large proportion in the spleen and liver, suggested to the author the thought that these are newly formed elements which have not yet arrived at physiologic maturity.

Gastric Glands Under Conditions of Lethargy and Activity.—In an investigation of the gastric glands of the marmot, with regard to their microchemistry the lethargy of winter and the activity of summer, R. and A. Monti (Arch. Ital. de Biol., Sept. 10, 1903) reached the conclusion that the delomorphic (acid) cells elaborate the hydrochloric acid in a very dilute solution, and eliminate it as rapidly as it is produced. This function is completely suspended during the lethargy of hibernation. On the other hand, the chief (peptic) cells elaborate pepsinogenic granules which slowly accumulate and are rapidly eliminated at the beginning of digestion.

Laws Governing the Secretion of the Aqueous Humor.—The physiological mechanism by which the aqueous humor is produced, resides, according to A. Angelucci (Archives Ital. de Biol., Sept. 10, 1903) in the parietal cells of the uveal capillaries. Section of the vascular nerves changes the function of these cells in such a manner that, at first, the lymph secreted is quantitatively diminished, while its chemical composition approaches more closely to that of the plasma of the blood. Strong electric and mechanic shocks imparted to the vascular fibres of the fifth nerve and the cervical sympathetic, produce nearly the same effects as division of the nerves; the albuminous content of the aqueous humor increases, and there is augmented intraocular tension. Lesions and irritations of the surrounding tissues, particularly of the cornea, and of the anterior part of the uveal tract during paracentesis, have the same effect as section and powerful irritation of the vascular nerves, increasing the quantity of albumin and imparting a fibrinous character to the aqueous humor. The above changes are attributed to the disturbance of the physiological equilibrium existing between the vascular nerves, the surrounding tissues and the capillary wall.

Transformation of Caffeine and of Xanthine into Uric Acid.—Caffeine and the other methylated xanthines are transformed in the animal organism, gradually losing their methyl groups, according to A. Valenti (Arch. Ital. de Biol., Sept. 10, 1903). The close affinity between xanthine and uric acid, brought to light by Fisher's research on the purin group, suggested to the author that possibly following the administration of caffeine, the xanthine group contained in the latter would be oxidized in the body into uric acid. If this be the case, then the higher methylated xanthines forming a considerable part of the diet of civilized people, in the form of tea, coffee and chocolate, might be considered as sources of uric acid. The author found that xanthine administered to a pigeon, is largely oxidized into uric acid, as has already been proved in the case

of hypoxanthine. He also found this to be the case with caffeine. This fact is of possible importance, for it affords a theoretical basis for the exclusion of coffee and its relatives from the diet of those subject to the uric acid diathesis. The author demonstrated that, at least in the ox, the liver is the seat of the transformation of large quantities of xanthine artificially administered.

Nature of the Physiologically Active Substances in Extracts of Nervous Tissues and Blood.—There are two groups of substances in watery extracts of nervous tissues, which, when injected into the veins of an animal, lower the blood-pressure, according to S. VINCENT and W. CRAMER (Jour. of Physiol., Nov. 2, 1903). Both of these are soluble in water and in normal saline solution (NaCl .9 per cent. in tap water). One group is easily soluble in absolute alcohol and the other scarcely soluble in this fluid. The alcoholic solution contains two depressor substances; one of them has its effect abolished by atropine, the other has not. The latter is the more powerful, but rather the less soluble in alcohol. The alcoholic solution gives an abundant precipitate with platinum chloride. Only a small part of this is readily soluble in water and on purifying gives octahedra and prismatic crystals. The greater part of the precipitate consists of potassium and ammonium platinum chlorides. The octahedra are the ammonium salts. The prisms have a platinum percentage of 32.8 corresponding to the platinum double salt of di-choline anhydride. The authors have not found any choline as such in brain extracts, but there is evidence that this substance exists in nervous tissues in the form above mentioned. The chemical and physiological tests recommended for choline in pathological blood cannot be relied upon; indeed, normal blood gives both the octahedra and frequently also the depressor effect.

Physiological Action of Betaïne Extracted from Raw Beet-Sugar.—In a series of experiments made with a different object in view, A. D. WALLER and R. H. ADERS PLIMMER (Proc. of the Royal Soc., Oct. 31, 1903) noticed that syrups made with ordinary beet-sugar had a faint cadaveric odor reminiscent of choline and neurine solutions, and the suspicion was aroused that the taint of the samples in question might be due to the presence of betaïne or of allied alkaloid. On investigation, Plimmer found this actually to be the case. In experiments upon cats and dogs they found that the hydrochloride of betaïne injected into a vein acts directly upon the heart and that commercial betaïne (Merck) is more powerful than betaïne extracted from beet-sugar. In all instances the mode of death has been by cardiac syncope from which no recovery could be obtained by artificial respiration. With sublethal doses the characteristic effect was a temporary fall of blood pressure, with a slight augmentation of the respiratory movements. It appears that betaïne in considerable quantity (3.75 per 1,000) is present in raw beet sugar.

Proteolytic Enzymes of the Spleen.—The most fruitful fields for physiological research to-day seem to be the domain of the various animal enzymes. S. G. HEDIN (Jour. of Physiol., Nov. 2, 1903) finds in the spleen of the ox two proteolytic enzymes, the one (α-protease) acting only or principally in an alkaline medium, and the other (β-protease) acting only or mainly in an acid medium. The β-protease can be obtained in solution by digesting the spleen with very weak acetic acid, and the α-protease (together with β-protease) by extracting the residue, with sodium chloride solution, dialysing and precipitating with weak acetic acid. The precipitate contains both enzymes. Both enzymes have been obtained in two forms: Combined with nuclein substances in which case they are not soluble in weak acetic acid; and not combined with nucleins, and therefore soluble in weak acetic acid. The form not soluble in weak acetic acid can be obtained from the soluble form by adding a nuclein substance and acetic acid in absence of salt. Ox-serum contains antibodies of the α-protease, but not of the β-protease. The spleen enzymes are in all probability contained in the leucocytes of the spleen, and there they may perform their functions. There they may affect the metabolism of the nitrogen inside the cells, and they may also have something to do with the digesting processes, which, according to the view of Metchnikoff take place inside these cells during the phagocytosis. As to the significance of the β-protease, it should be remembered that the acid reaction required for its activity according to investigations carried out by Ehrlich and particularly by Metchnikoff and his pupils occurs at some places inside the leucocytes. Thus the reaction of the nuclei is considered to be acid, and the digestion of bacteria and other substances taken up by the leucocytes in most cases takes place inside the so-called digesting vacuoles, where the reaction as a rule is acid. Whether the spleen enzymes may be active outside the leucocytes as well as inside is a question which cannot be settled at present. It does not seem to be impossible that the enzymes could leave the cells either by an act of secretion or perhaps by digesting some of the cells. Similar or perhaps identical enzymes seem to be present in several organs, although not in such amounts as in the spleen, and there may be proteolytic enzymes in the blood, although their activity may be checked by antibodies. Therefore, the author does not think that the spleen enzymes should at once be ranked with the so-called intracellular enzymes.

Proteolytic Enzyme in Ox Serum.—A weak proteid-digesting enzyme, acting in an alkaline medium, has been discovered in the serum of the ox by S. G. HEDIN (Jour. of Physiol., Nov. 2, 1903). The easiest way of obtaining it is to precipitate it together with a nuclein substance, *e.g.*, casein. Antibodies prevent the enzyme from acting in the serum. These are mainly contained in the albumin fraction. The enzyme may possibly be derived from the leucocytes in the blood or in other organs either by a destructive process, which might set the enzyme free, or by an act of secretion.

New Researches in Phosphocarnic Acid.—This phosphorized substance to which has also been given the name nucleone, is, according to A. PANELLA (Arch. Ital. de Biol., Sept. 10, 1903), a regular constituent of striated muscle, urine, heart, liver and kidney of various animals. The author has also discovered its presence in the brain. It is more abundant in the muscles of the rabbit than in those of the dog. It diminishes after death in direct ratio to the appearance and establishment of rigor mortis. After the latter has disappeared, the acid increases progressively with the commencement and course of putrefaction.

Action of Choline, Neurine, Muscarine and Betaïne on Isolated Nerve and Upon the Excised Heart.—A careful series of experiments was undertaken by A. D. WALLER and Miss S. C. M. SOWTON (Proc. of the Royal Soc., Oct. 31, 1903), with a view of comparing the physiological action of the above four members of the ptomaine group of organic bases. These substances are closely related, as the following formulæ show: Choline, $C_5H_{15}NO_2$; neurine, $C_5H_{13}NO$; muscarine $C_5H_{13}NO_2$; and betaïne, $C_8H_{15}NO_2$. The action of snake venom, diphtheria toxin and tetano-toxin was also investigated. Pure neurine non-

neutralized was found to be very toxic to nerve. Betaïne, as regards its direct effect upon nerve, is moderately active, *i.e.*, the electromobility of nerve, as evidenced by the negative variation of its current of injury, is abolished by betaïne and restored by subsequent prolonged immersion in physiological saline. Muscarine has a similar effect, but rather more pronounced. A comparison of the four substances was made by taking four nerves, as nearly similar as possible, and passing them simultaneously through each of the four test solutions and through physiological saline. The negative variation of nerve 1 immersed for seven hours in muscarine, was completely and permanently abolished. That of nerve 2, for seven hours in betaïne, was temporarily abolished. That of nerve 3, after seven hours in choline, was unaffected, and after twenty-seven hours diminished. That of nerve 4, in neurine for seven hours, was temporarily abolished and permanently diminished. Decomposed cerebrospinal fluid and decomposed serum-albumin temporarily abolished the negative variation of the nerve after an immersion lasting one and a half hours. Snake, diphtheritic and tetanus toxins also caused temporary abolition. Neurine, choline, muscarine and betaïne (as hydrochlorides) bring about diastolic arrest of the heart. The arrest thus produced is antagonized by the sulphate of atropine. Neurine and muscarine, in this respect, are more active than betaïne or choline.

A Few Reflections on Parthenogenesis.—A number of reasons which he thinks call into question the possibility of parthenogenetic reproduction of bees (*e.g.*, the development of the drones from unfertilized eggs), are advanced by E. Pflüger (Pflüger's Archiv, Sept. 23, 1903). The current teaching is that from unfertilized eggs there develop only drones; that the latter never develop from fertilized eggs; the drones can never reproduce male bees, but always have female descendants. The author interprets these statements as showing that the drones are only incomplete males whose testicle is endowed with but one-half of the necessary potency. He therefore concludes that the other half is present in the queen bee, which possesses the testicle necessary to reproduce males, and is, therefore, an hermaphrodite. In fact, hermaphroditism has already been observed in bees and butterflies.

Permeability of the Bladder.—Inasmuch as there has been a marked difference of opinion among investigators as to whether the wall of the bladder has any resorptive power, G. Fasola and G. Galeotti (Archives Ital. de Biol., Sept. 10, 1903) decided to explore this subject anew. Their experiments consisted in the injection into the bladder of dogs in which the ureters had been tied, of definite quantities of known solutions, and then measuring these after the lapse of a certain time. In other cases the vesical epithelium was beforehand altered by chloroform. They found that in the latter, the epithelium of the bladder acts as an inert semi-permeable membrane separating the blood from the contents of the organ. Across this membrane the osmotic equilibrium is soon established. There are no histological lesions accompanying the action of the chloroform employed, hence its effect is purely functional. In general, in the case of epithelium not acted upon by chloroform, the osmotic equilibrium is not established, and the vesical wall acts according to the physiologic necessities of the organism. In the case of hypotonic solutions, there is no variation either in volume or in concentration. With isotonic solutions there is no variation in the liquid injected if the animal has been well supplied with food and drink, but there is a partial absorption if the animal has been hungry or thirsty. In the case of hypertonic solutions there is a considerable absorption of sodium chloride. It follows that the bladder epithelium, at least of the dog, is permeable to either salt or water. The authors believe that the physiological significance of the resorptive power of the bladder with respect to sodium chloride lies in the fact that the organism finds it necessary to economize the chlorides: A great loss of this substance in a concentrated urine is obviated by its return to the circulation by way of the vesical wall. This permeability with respect to sodium chloride is a functional property of the epithelium of the bladder, a property which is suspended by the action of chloroform; for in the former case, osmosis occurs only one way, from the bladder to the blood, whilst in the latter case the osmotic flow is in both directions, leading to an equilibrium.

THERAPEUTICS.

Atropine and Hyoscyamine—A Study of Optical Isomers.—The relationship between the physical chemistry of various drugs and their physiological action is coming more and more to the foreground. A. R. Cushny (Jour. of Physiol., Nov. 2, 1903), finds that pure atropine and hyoscyamine act in the same way, and with equal potency on the central nervous system in mammals, and on the heart and terminations of the motor nerves in the frog. Atropine possesses a more powerful (stimulant) action on the reflexes of the spinal cord in the frog than hyoscyamine. The latter is almost twice as powerful as atropine in its action on the nerve ends in the salivary glands, heart and pupil. On the ground that the action of atropine is the resultant of the action of equal amounts of levo-hyoscyamine, the natural base, and dextro-hyoscyamine, these facts are interpreted as indicating that dextro-hyoscyamine has a more powerful action on the spinal cord than levo-hyoscyamine, while it has very little effect on the peripheral neurons mentioned. The examination of the action of dextro-hyoscyamine on these neurons proved this to be correct. Some organs have the power of differentiating between optical isomers, while others seem to be devoid of this power.

Strychnine in the Treatment of Sciatica.—At the present time we resort to many methods in the treatment of sciatica, such as massage and gymnastics, hydrotherapy, electricity, internal and external medication, is made without benefiting the patient in many of the cases, although here and there may be seen a case in which one or the other method of treatment may be useful. Th. O. Zarzyn (Roussky Vrach, Oct. 11, 1903) reports nine cases in which he resorted to the hypodermic use of strychnine, in 4 of the cases all the symptoms disappeared rapidly; 3 showed only considerable improvement, and this notwithstanding the very frequent injections of the drug; the other two were not influenced by the drug. The author is inclined to consider the hypodermatic employment of strychnine as the best method of treatment we have at present for sciatica.

The Action of Apocodeine.—This substance is an alkaloid obtained with some difficulty by the dehydration of codeine and it bears the same relationship to codeine that apomorphine bears to morphine, according to W. E. Dixon (Jour. of Physiol., Nov. 2, 1903). He finds that it very readily paralyzes nerve cells in exactly the same way as nicotine, but differs from the latter in that there is no initial stimulation. After the nerve cells have been paralyzed by apocodeine, nicotine on injection produces none of its usual effects such as rise in blood-pressure, vaso-constriction, etc., while the action of adrenalin remains unimpaired. As a result of this paralysis, arterioles dilate, blood-press-

ure falls, the heart beats more rapidly, and the automatic movements of plain muscle are all increased. Recovery is very slow. It is suggested that the increased peristaltic movements produced by the injection of many of the opium alkaloids and their derivatives is due to depression of the inhibitory sympathetic nerve cells. In a series of four of these alkaloids the purgative action varies directly with their paralytic effect in sympathetic ganglia. Reflexes are increased and strychnine-like convulsions are even sometimes seen. This is probably an effect on the sensory side of the cord. It is also suggested that nicotine directly stimulates the motor nerve cells in the cord, and that adrenalin diminishes resistance to impulses, especially in the motor side of the cord. Larger amounts of apocodeine paralyze the motor nerve endings in voluntary muscle like curare. The vagal endings in the heart are paralyzed as in the case of atropine. With still bigger doses after a preliminary stimulation, paralysis of vasomotor nerve-endings is produced. When this action is complete pilocarpine, physostigmine and adrenalin have no effect on the blood-vessels or blood-pressure, whilst barium and digitalis will still constrict the vessels and raise the blood-pressure. The effect of digitalis is, however, considerably diminished. The former three drugs therefore act on nerve-endings, and the latter two directly on muscle. The motor and inhibitory nerves to the intestines are paralyzed and, therefore, adrenalin and pilocarpine have no action. Other nerve-endings such as the hypogastrics are not affected, and adrenalin still produces its normal inhibition and pilocarpine some augmentation of movement. The accelerator nerve-endings in the heart are paralyzed. This effect is relatively easy to produce in the young animal. Adrenalin, caffeine and aconitine in large amounts quicken the normal heart, even when the vagi are paralyzed and it is profused artificially outside the body. After apocodeine adrenalin no longer accelerates, but caffeine and aconitine can still quicken. The latter two drugs, therefore, affect the heart muscle. The antagonism between apocodeine and either adrenalin or pilocarpine is on tissues, and is probably not the same as that between atropine and pilocarpine. On the intact animal apocodeine produces erection of the hairs over the face area and back, and edema of the face. The former effect is due to peripheral sympathetic excitation, the cause of the latter is doubtful.

Treatment of Chronic Interstitial Nephritis.—The effect of various measures upon chronic interstitial nephritis by quantitative control of albumin and estimation of blood-pressure, has been studied by P. Edel (Munch. med. Woch., Oct. 27, 1903), who comes to the following conclusions: Warmth and carbonated baths diminish both albumin and blood-pressure. The same is also true for rest in bed and inhalations of amyl nitrite. Exercise, especially climbing mountains, seems to have a very favorable influence; in normal individuals the pressure rises greatly, but in those afflicted with Bright's disease there is considerable dilatation of the vessels. The best results were obtained if the patients were allowed to exercise in the forenoon. Since albuminuria and increased arterial tension go hand in hand, it is likely that interstitial nephritis is directly due to a narrowing of the afferent vessels of the kidney. Neurasthenia constitutes an important etiological factor, and it would be a great mistake to condemn patients to muscular inactivity simply because they have a little serum albumin in their urine.

Treatment of Pulmonary Tuberculosis by Formaldehyde.—There are three different ways of administering formaldehyde in pulmonary tuberculosis. The first is by inhalation, the second by intravenous injection, the third by electricity. De Chowry Muthu (Brit. Med. Jour., Oct. 24, 1903), in discussing the first method, says that the idea that volatile substances inhaled are beneficial in consumption is as old as the Greeks. There are two ways of using inhalation, first by the ora-nasal inhaler, second by the vaporizer. The inhaler is pyramidal, flexible and light, made of perforated zinc and fits the chin accurately. He recommends a mixture of 40 per cent. of formalin, one part of chloroform, two parts rectified spirit, a few drops of ammonia are added to the mixture to neutralize the pungency of the vapor. The advantages of this method are, first, its simplicity, and the fact that the patient is able to use it in the open air or indoors at will, and second, that it prevents the inhalation of dust, and third, that the patient after leaving the sanatorium is able to effect this method of medication himself. The vaporizer consists of a spirit lamp with open boiler, into the mouth of which is let a tray which carries paraform powder with a little menthol for neutralization. The moist products from the decomposition of the spirit causes the evolution of the gas. The steam renders the action of the formaldehyde more effective and penetrating. This vapor bath is taken for an hour or two daily with the doors and windows partly closed. The advantages of this instrument are that the patient's room and its contents are rendered aseptic by constant disinfection, so that without practical doubt all expectorated tubercle bacilli are killed daily. Two conditions are necessary for inhalation to be efficacious. First, the inhaler must cover the nose; second, it must be continuously worn. To the statements made by many that these methods of treatment are futile, it is interesting to note that the state of the lungs of those engaged in dusty occupations has always shown that the inhaled dust penetrates far into the pulmonary tissue. Furthermore, if a volatile substance like chloroform can, when inhaled enters into the circulation, it does not seem reasonable to doubt that formaldehyde when inhaled, especially with chloroform and spirit, does not enter the alveoli. The writer has kept full records of more than 100 patients, and his conclusions are that these methods are a distinctly advantageous accessory to the open air treatment. The intravenous injection method is as yet *sub judice*. The writer commences the treatment with 50 c.c. of a strength of 1 in 2,000, increasing to 1 in 1,000. The patient often complains of numbness in the hands. The temperature sometimes rises slightly and sick headache and shivering fits are occasional. Dr. Rankin has injected 200 c.c. of 1 in 500. There was no result from this save a numbness at the tip of tongue. The objection to this form of treatment is that owing to the non-vascular character of the tubercular tissue, the formaldehyde cannot reach the affected part. It is, however, not intended to kill the tubercles *in situ*, the treatment being directed more to the lessening of the general septic infection than to a direct attack upon the tuberculous bacilli. As to the electric method, it is not as yet proven to be of service.

Vioform.—Vioform is preferable to iodoform, since it is a stronger antiseptic and deodorant without possessing the disagreeable odor of the latter. Large quantities may be introduced into the system without giving rise to toxic symptoms, and sterilization up to 140° C. does not alter its properties. It is inferior to iodoform in only one respect, in that it is unsuited for the conservative treatment of tuberculous joints. R Wehrle (Correspbl. f. Schweiz. Aerzte, Oct. 15, 1903, supplement) does not hesitate to state that it is a most valuable antiseptic.

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ERADICATION OF EXPECTORATION.

IN a pamphlet recently issued by the Chicago Board of Health on Suggestions for the Teaching of Cleanliness among School Children the first direction to the teacher is that children should be taught very emphatically not to spit—it is rarely necessary. To spit on a slate, floor or sidewalk is an abomination. It must appeal to everyone that this is making a beginning at the proper place. Expectoration in healthy children is a habit indulged in mainly because of bad example, and as the child is an imitative animal, perpetuated. As the Health Department's bulletin says "To too many children their one ideal is the hoodlum or street Arab who can squirt through his teeth."

Now that the crusade against tuberculosis is well under way a better idea of the dangers of expectoration is gradually becoming manifest. Last year, at the meeting of the British Medical Association, it was shown by a series of carefully prepared statistics that while factory workers were very liable to contract tuberculosis when there were many men employes among the number and some of them had tuberculosis, where the employes were exclusively female, there was much less danger. The reason is not far to seek and is evidently the habits of the two sexes in the matter of expectoration. Male employes are constantly subjecting their fellow-workmen to the danger of contracting disease by their habit of spitting around in all sorts of out of the way places where the expectoration becomes dried and gets into the air to become a source of infection for others.

That the immunity of working women in factories, where only women are employed, is not entirely due to their better habits as individuals—their avoidance for instance of alcohol and of exposure—can be understood from a second set of statistics which show that certain classes of working women, especially those who are employed in laundries and those who do duty as scrubwomen in large public buildings, are particularly liable to suffer from tuberculosis. In these cases the source of the infection is entirely attributable to the fact that these women are brought in contact with expectorated material on garments that have to be washed, or on the floors in the ordinary course of their employment.

Special effort should be made at school and also at the home to teach boys that they have no more right to expectorate than have their sisters. The lesson is simple. Very little insistence would secure its effective learning. This of itself, small as it may appear to be, would do more at the present moment than any other simple precaution that can be thought of to help in the prevention of the spread of tuberculosis. We as physicians should use all the weight of our influence to secure this advance in manners and the result will be evident before the rising generation is many years older.

LEGISLATION AND FIREWORKS.

AT a recent meeting of the New York State Medical Association a resolution presented by the Mississippi Valley Medical Association asking the cooperation of the medical profession in New York for the purpose of obtaining such legislation as will be necessary to prevent, as far as possible, the present list of casualties that occur every year on and about the Fourth of July in this country was unanimously adopted.

This movement has been taken up by many of the important medical bodies of this country within the last few months and promises to have a successful issue if medical men generally will interest themselves in presenting the subject properly to their legislators. Many State legislatures have just begun their annual sessions, therefore this is the appropriate time for physicians to bring their influence to bear and to furnish the

information necessary to make it clear how indispensable is legislation for the regulation of the present thoughtless but supremely harmful method of celebrating Independence Day.

The committee on Public Health of the New York State Medical Association are helping to distribute a pamphlet reprint from the *Journal of the American Medical Association* in which all the data necessary for a proper understanding of the awful mortality now usual at the beginning of July may be obtained. The last Fourth-of-July celebration caused the death or injury of nearly 4,500 persons. Among these 60 were killed outright, 10 lost the sight of both eyes, 75 lost one eye, 54 lost hands, arms, or legs, 174 lost one or more fingers and 3,670 received other injuries. Besides this fearful total there were over 400 deaths from tetanus which developed in wounds inflicted by fireworks on or around the Fourth of July. Many battles that are considered of great importance in history were fought without having a casualty list as large as this. No engagement of our Spanish-American War cost anything like so many lives or the disablement of so many of the combatants and the whole mortality and morbidity record of that war scarce equals in losses a single Fourth of July in deadliness.

There may be some doubt as to whether this is not an off year and whether, perhaps, there were not many more persons killed and injured than is usual. As a matter of fact, this is the first time in the history of this country that a complete list of the casualties incident to the Fourth of July has been made. Great care was exercised in the collection of the statistics and in the pamphlet issued by the *Journal of the American Medical Association*, the names of all persons who died from tetanus, with their residence, the circumstances of their wounding the special piece of fireworks that caused it and the termination of the case are reported.

No cases were accepted on mere hearsay and there was no accumulation of general statements from newspapers. In one large city where a newspaper reported 90 deaths only 10 were accepted in the statistics. The newspapers of Philadelphia stated that 500 people were injured in that city in connection with the Fourth-of-July celebration and that 380 received hospital treatment. The maker of the table could find definite details as to only 151 cases and these were the only ones reported. It is evident then that this table of mortality is eminently conservative in its make-up and that the injuries and fatalities must be accepted without any demurrer because of supposed lack of faithful investigation. Surely, with these facts before them, legislators will realize the necessity for passing stringent laws with regard to the sale and use of fire arms and all dangerous classes of fireworks for the Fourth of July.

Three classes of deadly weapons, as the events prove, are now in common use among the young people of this country, for the making of the noise necessary to show their patriotism. These are the toy pistol—the most deadly of weapons—the blank cartridge, and the giant firecracker. A determined effort must be made to do away with the permission now granted very commonly to sell such fireworks and borough and city ordinances will have to be amended so as to prevent their use. If this can be accomplished during the present winter there will be over 500 fewer deaths at the beginning of July and 5,000 families will not be called upon to suffer anxiety and discomfort because of the wounding of one of the members of the family during the senseless celebration of the "Fourth," when for one day the peace and health of the country are practically committed into the hands of children between four and sixteen years of age, while the rest look on and breathe a fervent prayer that nothing may happen, though they are sure that something is bound to happen to a great many of the participants.

In many places all that will be necessary will be for local boards of health to exercise the powers of guardianship of public health to secure the enforcement of legal regulations already existent but allowed to fall into innocuous desuetude. In others, new laws will be needed but their passage can surely be secured without difficulty if the present awful state of affairs is properly presented to the public and legislators.

OCHRONOSIS.

THE term ochronosis was first applied by Virchow to a remarkable pathologico-anatomical condition in which at autopsy nearly all cartilages of the body presented an intensely black discoloration.

Following his publication in 1866 five additional cases have been reported, viz., by Boström, v. Hansemann, Heile, Hecker and Wolf, and Albrecht and Zdarcek. In all of these "melanuria" was observed during life and in four the urine was black when passed. As regards the nature

of the urinary pigment Virchow suggested that this might possibly be a hematin derivative, while Boström, Heile and Hecker-Wolf regarded it as a melanin. Albrecht and Zdareck, on the other hand, although they were unable to isolate either homogentisinic acid or uroleucinic acid from the small amount of urine which was obtained at autopsy, express the opinion nevertheless that the melanuria may be referable to an alkapton acid or a corresponding derivative and suggest that the black color of the cartilage may then result through some interaction between an acid of this character and the common chondroitin sulphuric acid of the cartilage. In other words, they regard the ochronosis as the pathologico-anatomical expression of alkaptonuria.

Langstein recently has criticised the conclusions of Albrecht and Zdareck and has pointed out that the results of their chemical examination do not warrant the assumption that an alkapton acid was present in the urine. He communicates his own observations with reference to the urine of v. Hansemann's case, some of which had been preserved in a sealed glass tube. The urine reduced neither Fehling's solution, nor ammoniacal silver solution, and with ether no substance could be extracted which gave the alkapton reaction with a dilute solution of ferric chloride, viz., a momentary green coloration. All these reactions, however, were positive in the urine obtained by Albrecht and Zdareck. Like these observers, Langstein was unable to isolate either homogentisinic acid or uroleucinic acid, although these can readily be obtained with true alkapton urines, even when present in small amounts. As a further support to his conclusion that the melanuria in these cases is not referable to an alkaptonuria, he points out that in a true alkaptonuric, whom he was able to observe during many weeks, there was not noticeable the slightest discoloration of the cartilages of the ears.

In view of these contradictory reports, in which the diagnosis of ochronosis was only made at autopsy and in which altogether satisfactory examinations of the urine were not possible—in the one case only 20 c.c. obtained at autopsy were available, and in the other the urine had been preserved for several years in a sealed tube—it is interesting to note that in three undoubted alkaptonuric individuals observed in the United States the diagnosis of associated ochronosis could be made during life. A detailed report on this association may be anticipated at an early date.

ECHOES AND NEWS.

NEW YORK.

Illustrated Review of Physiologic Therapeutics.—This is the title of a most ambitious periodical published by E. R. Pelton, of New York. The first number, which is a quarto of 136 pages, is beautifully gotten up and the enterprise is worthy of the most active support. Dr. S. D. Morrell is the editor.

Christian A. Herter Lectureship.—The Faculty of the University and Bellevue Hospital Medical College announce the first series of Christian A. Herter Lectures, to be delivered by W. D. Halliburton, M.D., F.R.S., Professor of Physiology, Kings College, London, on "The Biochemistry of Nerve and Muscle." These lectures will be an extension of a course delivered before the students of the University of London; they will be illustrated by experiments and will contain the results of the lecturer's own physiological and pathological research. The course will begin on Monday, January 4, and will continue until Saturday, January 16, daily, at 4 o'clock, at the Carnegie Laboratory, 338 East Twenty-sixth Street. Those desiring reserved seats for the course will please communicate with Dr. E. K. Dunham or Dr. Graham Lusk.

Preventive Medicine Prize Essays.—The Maltine Company announces that after December 15 they will have ready for distribution the two essays on Preventive Medicine to which they awarded prizes of $1,000 and $500, respectively. They will be bound in permanent book form and will be sent by the company without charge to all physicians who request them. Address, The Maltine Company, Brooklyn, New York.

The Late Drs. Davison H. Smith, J. F. Chauveau, and David Franklin.—At a meeting of the Medical Association of the Greater City of New York, held December 14, 1903, the following report was received and adopted: It is with profound regret that your committee record the sudden and untimely death of Dr. Davison Heermance Smith, a member of this Association and the son of its esteemed President. The subject of this sketch was born in New York in June, 1875. After a suitable preparatory course of study he entered the academic department of Columbia University, receiving in due course the degree of B.A. From the medical department of the same university he was graduated in 1902, and soon afterward he was admitted to the House Staff of the New York Post-Graduate Hospital. It was in this institution that his death occurred from surgical shock, the result of a painful operation, bravely met, that was undertaken for the relief of mastoiditis. Possessing a genial and generous disposition, he endeared himself to a large circle of friends, and, though only on the threshold of his professional career, he gave promise of early success in a manifest zeal, earnestness of purpose, and faithful regard for duty. On behalf of this Association the Committee extends to the bereaved family of the deceased assurances of the inexpressible depth of its sorrow and sympathy in their affliction, and furthermore recommend that appropriate notice of his death be entered in the minutes of the Association and that a copy be transmitted to his family. (Signed) J. Blake White, P. Brynberg Porter, Wm. Seaman Bainbridge.

At the same meeting a report of the Committee on the death of Dr. Jean F. Chauveau was presented, which was in part as follows: A few months ago he celebrated the fiftieth anniversary of his entrance

to the medical profession, an occasion which prompted the affectionate congratulations of a large number of friends who had learned to value the kindness and gentleness, as well as the wisdom, with which he always met the requirements of friendship and professional loyalty. (Signed) A. B. Judson, A. B. Ball, F. E. Sondern.

Also a report of the Committee on the death of Dr. David Franklin, the concluding portion of which was as follows: Of him it may truly be said, medicine was his religion and his politics, his happiness and his misery. He was of unimpeachable honor and integrity. He had the gentleness of a woman and the nerve of a man of steel. He was keenly observant and of wonderful patience and endurance. He was beloved by his friends and adored by his patients.

Resolved, That this Association express by a record on its minutes its deep sense of loss in the death of Dr. Franklin, and that a copy of these resolutions be sent to his family, together with an expression of the Association's profound sympathy. (Signed) Samuel M. Brickner, Edward Fridenberg.

Opium at Auburn Prison.—It is said that through the connivance of certain officers at Auburn prison the convicts there are being daily supplied with opium. The opium evil is one of the worst with which prison officials have to contend. The officers are constantly in fear of the possible act of some opium-crazed convict, who frequently attempts murder for some real or imaginary wrong. As a result of Warden Mead's investigations, one officer has resigned and other resignations or dismissals are expected. Locked up in the warden's office at the prison is a bag of innocent-appearing English walnuts. They came about Thanksgiving time addressed to a convict. An officer with a keen scent thought he detected the smell of opium, and cracking one of the nuts found enough inside to satisfy the craving of an opium fiend for some time. Opium has been found frequently rolled up in tinfoil in bottles of mustard pickles. The officers have constantly to be on the lookout for this sort of thing. The physicians are under instructions to keep a close watch to see if any of the men are using it.

Eastern Medical Society of New York.—This society has engaged permanent quarters at Clinton Hall, 151-153 Clinton Street, New York. Possession will be taken on or about January 1. The building will offer every facility of the modern clubhouse, all of which will be open to the members. A reference library is one of the projected features of the society. At the annual election, held recently, the following officers were elected: President, Dr. Louis J. Ladinski; 1st vice-president, Dr. David Robinsohn; 2d vice-president, Dr. Tobias Berger; treasurer, Dr. Joseph Barsky; corresponding secretary, Dr. Abr. L. Wolbarst; recording secretary, Dr. A. J. Ronginsky. Dr. W. Freudenthal was elected trustee for three years. The chairmen of the new committees are: Committee on Ethics, Dr. A. A. Himowich; Committee on House, Dr. E. K. Browd; Committee on Admission, Dr. John A. Price; Committee on Library, Dr. Charles Rayevsky.

PHILADELPHIA.

Physician Seriously Injured.—Dr. George I. McLeod, Jr., of Ardmore, was badly injured on the evening of December 16 while trying to board a moving train at that place. Both feet were so severely crushed that they had to be amputated later at the Pennsylvania Hospital, where the patient was taken. He is now doing well and recovery seems assured. Dr. McLeod served in Porto Rico during the Spanish-American war and last year distinguished himself at Ardmore by abandoning his practice to care for smallpox patients at that place.

Scientists to Meet in Philadelphia.—On December 29, 30 and 31, the annual meeting of five affiliated American scientific societies will be held at the University of Pennsylvania. The Association of American Anatomists will meet in the Wistar Institute; the Society of American Bacteriologists in the Laboratory of Hygiene; the Society for Plant Morphology and Physiology in Biological Hall; the American Physiological Society on Tuesday in Medical Hall, and on Wednesday at Jefferson Medical College, and the American Society of Zoologists, Eastern Branch, in Biological Hall.

Advantages of the Marine Hospital Service.—"Advantages Offered by the Public Health and Marine Hospital Service of the United States to Recent Graduates in Medicine" was the title of an address given to the students of Jefferson Medical College December 16 by Surgeon-General Walter Wyman. The speaker was the guest for the evening of the H. A. Hare Medical Society of the college. Dr. Wyman said that the principal features of the Marine Hospital service were not generally understood. After mentioning many of the facts regarding its organization he stated that there were 22 national marine hospitals and 121 relief stations. In them are treated annually 56,000 seamen. Continuing, Dr. Wyman said: "I know of no medical service in the world that holds out the same facilities for the professional advancement of its officers. It has at least fifteen expert bacteriologists. It offers opportunities and encouragement for continued study, free from the petty annoyances and interruptions of private practice. It keeps its officers supplied with the latest books, instruments and apparatus, beyond the reach of many recent graduates. Aptitude and ambition to excel in any branch of medicine, surgery or preventive medicine have in it their full chance of fruition. The service has a fine record and a brilliant future—and it is free from politics."

CHICAGO.

Report of Illinois State Board of Health.—The Secretary of the Illinois State Board of Health, Dr. James A. Egan, Springfield, has just issued a report on medical education and an official register of legally qualified physicians. The book contains a list of the city, district, and county medical societies; a list of the Chicago Medical Colleges, and their faculties; a summary of the laws and regulations governing the practice of medicine in the United States and territories of the Union; a list of the medical colleges in the United States, and a summary of the decisions of Illinois courts of interest to physicians. It is a book of nearly 600 pages; it is well printed, and reflects great credit on the Secretary of the Board, upon whom devolved most of the work in its preparation.

How Crime May Be Prevented.—This subject was discussed by Judge Richard S. Tuthill at the monthly dinner of the Marquette Club recently. Among other things, the Judge said: "There has been no improvement in 500 years in treating criminals. There is some modification in punishment, but the main idea is to punish the criminal. Punishment is not the only remedy. Adults should be punished, but the way to prevent crime is to teach the children that the police, the judge and the law are not their enemies. Criminality is a disease. If it has developed in the boy beyond cure, send him to an

isolation hospital for from one to three years, where he will have good men and good women to help him with their advice. The child criminal," continued the judge, "began with staying away from school. Then the boy who had to have amusement would patronize cheap theaters, and to go there had to steal. Then came the criminal court, the jail, and the bridewell, where he was graduated in crime through the agency of the State."

Reappointment of Dr. Reynolds.—Commissioner of Health Arthur R. Reynolds was reappointed by Mayor Harrison on Dec. 14, and his appointment confirmed subsequently by the City Council.

Reduction in Diphtheria Mortality from Antitoxin.—The health department states that since the introduction of antitoxin in the treatment and prevention of diphtheria, its mortality-rate has been reduced by nearly one-half—that is, from an annual average of 6.25 deaths in every ten thousand of the population in the seven years, 1889-1895, to an annual average of 3.24 in the seven years, 1896-1902, of antitoxin treatment. But this is not enough. The seven years' experience clearly proves that no child should or ever did die of diphtheria when treated early enough with a sufficient quantity of good antitoxin. The pre-antitoxin mortality of diphtheria in Chicago was about 35 deaths in every one hundred cases of the disease. In the many thousands of cases among the poor and destitute treated by the department inspectors under the most adverse conditions, the rate for the whole number has been less than seven deaths in the one hundred cases. There are many physicians in Chicago and elsewhere who have records of hundreds of cases with a rate of less than two deaths per one hundred.

GENERAL.

Resignation of Dr. Goelet.—Dr. Augustin H. Goelet has resigned the Chair of Gynecological Electro-therapeutics in the International Correspondence Schools of Scranton, Pa., to take effect Jan. 1, 1904.

Vaccination for Railway Men.—The Pennsylvania Railroad Company on December 16 issued orders compelling all employes to be vaccinated. Dr. W. K. Shaw, local medical examiner, who has charge of the work in the Pittsburg Division, began at the Union Station. All trainmen were vaccinated, and with a corps of assistants the vaccination of the men at the Pitcairn shops was begun. All the local shops will be visited and no employe will be overlooked.

Index Medicus.—This valuable publication has now some 450 subscribers—a meager list and unfortunately a commentary on bibliographical scholarship. We learn that there is every reason to believe that, if 500 bona fide subscribers can be secured, that the Carnegie Institute will continue its appropriation and make the *Index* a permanent affair. American physicians should not rest under the imputation that there are only 500 of its 120,000 practitioners who are up and alive to the interests that the *Index Medicus* represents. There should be thousands of active, wide-awake men in this country ready to support the *Index*. American physicians are proud of their institutions. Surely the extent of this is not measured by a paltry $5.

Cause of Butler Epidemic.—Dr. George A. Soper, a sanitary expert, engaged by *The Engineering News* to investigate the typhoid epidemic at Butler, Pa., and its causes, reports that the epidemic has by no means attained its culmination, about 50 per cent. of the cases not having reached the critical stage. The epidemic he attributes to the suspension of the mechanical filtration of the city water supply. In three weeks there were 1,000 cases, and up to December 14, 1,247 cases and 51 deaths had been reported. Announcement was made December 15 that Andrew Carnegie had donated $5,000 to the Pittsburg typhoid fever aid fund.

Southern Medicine.—Dr. W. E. Fitch, the founder, and for many years editor and business manager of *The Georgia Journal of Medicine and Surgery*, published in Savannah, Ga., has sold his interest in the publication to his former associate and co-editor, Dr. St. J. B. Graham, who now becomes editor and sole proprietor. The name of his new venture is *Southern Medicine*.

A Museum of Security.—The American Institute of Social Service has been holding recently a series of meetings at the United Charities Building, 105 East Twenty-second Street, relative to the establishment in New York of a museum of security. The plan proposed is modeled after that of the Association of Industrialists of France. Such an institution would contain not only models of devices to prevent accidents, but also exhibits of means to improve hygienic conditions. As a result of its establishment on the Continent statistics show, or seem to show, that in Germany during a given period the fatalities numbered proportionately only one-fifth of those in America, while in Austria the proportion was even smaller. In support of argument favoring a closer study of accident prevention, Rev. Dr. Josiah Strong, the well-known sociologist, speaks as follows: "During the last five years there have been 38,890 killed on the railways of the United States. The injured in the same time have numbered 253,823. So the daily average of killed has been 21 and of injured 139. From these statistics it is seen that there are in this country to-day 51,882 persons who are condemned to death, to be executed on the railroads, within the next five years, taking into consideration the increase in travel. And you must remember that thousands of others are being killed in mines, factories, and building operations. John Mitchell tells us that two men die of injuries in the Pennsylvania anthracite mines every day."

While the facts here cited would seem to be conclusive proof of a woful lack of safety appliances, it appears to us that conclusions drawn from them are inadequate as a basis for the establishment of a security arsenal in this city. The death rate might be decreased somewhat, but it is not taken into account that a majority of accidents to life and limb are the direct result of gross carelessness on the part of their victims; and, in spite of all that might be done in the direction proposed, such decrease would not be commensurate with the efforts either of inventors or philanthropists. Humankind has never been quite able to see why, if conditions were thus and so, it might not be made to live forever, and consequently the imaginary draught from "fountains of youth" is always very refreshing and is always just on the point of merging into a real and actual potion. It is a curious fact that the death rate the world over holds about the same ratio to the birth rate year after year in spite of artificial devices on the part of man and of devastating disease on the part of nature. Let us safeguard ourselves in every reasonable way, let us fight abnormal influences in our lives whenever possible, but when comes the inevitable hour let our passing be quiet and without fear.

End of One Anti-drug Movement.—The so-called anti-drug movement in which some of the best-known New York clergymen were interested has

come to an end through its connection with a quack medical concern. Annoyed at the manner in which it has been advertised in newspaper stories, the International Committee organized for the suppression of drug addiction, has dissolved, with a declaration that not one member had profited to the extent of a single cent through his connection with the work. It was also stated in the preamble of the resolution that contributions, despite many public appeals, have not been sufficient to carry on the benevolent part of the work on an extended scale. "Confusion has arisen in the public mind from the mingling of a charity with a purely business enterprise, and there is difficulty in separating the two, and this committee stands sponsor for its business as well as its benevolence in sight of the world" are the closing words of the preamble.

Obituary.—Dr. Francis W. Higgins died suddenly at Cortland, N. Y., December 18, of heart disease, aged forty-six years. He was President of the Third District Branch of the New York State Medical Association and Vice-President of the State Medical Association.

CORRESPONDENCE.

"DISAPPOINTING THE DOCTORS."

To the Editor of the MEDICAL NEWS:

DEAR SIR: The editorial article in your issue of today very justly takes the Charity Organization Society to task for the ill-considered title which it has used for one of its Short Stories. While we shall try to make amends, as you suggest, in the editorial columns of *Charities* we should like, also, to trespass upon your space so far as to give the title its deeper meaning.

The cure of tuberculosis has for so long been thought of by charity workers as an almost hopeless task that we felt a genuine joy when our Society saw itself becoming an adjunct to the successful physician in the treatment of the dread disease. And when, as in this instance, our agent not only furnished good food and medicine, but also good cheer, spurred the patient's ambition and nurtured her hope of recovery, a hope which a number of physicians did not share, we may, perhaps, be forgiven for becoming unduly jubilant.

We are well aware that doctors are not disappointed by the restoration of the sick to sound health, and to give a true history of the successful cure of a consumptive patient in which physician, nurse and charitable worker all participated as an instance of how we are disappointing doctors, was, of course, distinctly unfair. It should, perhaps, have been entitled "The Story of How we are Disappointing the Grave." It is undoubtedly understood by everybody concerned, that the title was not intended to be taken literally but was formulated for the innocent purpose of catching the eye of a reader. It is of a class with the remarks not infrequently heard, implying that lawyers are disappointed when equity and justice prevail without expensive law suits; that doctors are in clover in times of epidemic or that representatives of organized charity prefer seasons of industrial depression and hard times. All are alike unjust and alike in questionable taste.

Will the doctors please accept our sincere apologies?

Sincerely yours,

New York, Dec, 21, 1903. EDWARD T. DEVINE.

Severe Grip.—The grip is particularly severe in New York City this winter, and pneumonia is a frequent and severe complication.

SOCIETY PROCEEDINGS.

SOCIETY OF THE ALUMNI OF CITY (CHARITY) HOSPITAL.

One Hundred and Eighth Stated Meeting, October 14, 1903.

The President, D. E. Walker, M.D., in the Chair.

Periodical Rise of Temperature After Miscarriage.—Dr. Potter said he saw three weeks ago, at what would have been the fifth menstrual period, a young woman in her first pregnancy had an attempted miscarriage. She first noticed, after getting up in the morning, that her night clothes were blood-stained, and she had pain. He was informed over the telephone of this condition by the husband. He adopted the usual treatment, and the pains stopped. The cervix at no time was very much dilated, and there was no further appearance of the hemorrhage. He made one vaginal examination, using rubber gloves, which had been boiled in a solution of lysol. Two days later the temperature went up to 104° F. A small dose of calomel and tincture of aconite was given and the temperature fell to 99° F. Three days after that there was another rise of temperature. The lungs were normal. In examining the patient this time he noticed a small boss in the first lumbar vertebra, but there was no history of any pain in the back nor difficulty in stooping over; nothing referable to Pott's disease when a child, and there was no pain around the eminence in the lumbar region. There was a slight pain in the lower iliac region of the left side, which was relieved by turning on the right side. That was relieved and temperature became normal. Several days later the patient being practically well, and walking around the room, the temperature again rose to 103.8° F., with no local symptoms. The blood had been examined five or six times for malarial plasmodia, but none had been found. Three physicians have seen the case, and none of them has made a diagnosis. The first physician who saw the patient in consultation never suggested the possibility of a general infectious disease. He thought it was due to the miscarriage—that is, pus somewhere in the pelvis. The surgeon who saw the case five or six hours afterward, at the request of the family, threw out any possibility of trouble in the pelvis. He said he could find nothing there, and thought the case was typhoid fever. She had typhoid fever five years ago. It certainly was not a typhoid temperature, and there was no Widal reaction. The urine had no albumin, no casts, but a few pus cells; sp. grav. was 1.018; reaction acid. Leucocytes at time of second attack were 12,000.

Dr. M. Manges said with reference to second attacks the facts are clearly stated by Kussmaul. Of his 1,000 cases 2¼ per cent. had two attacks. The interesting feature about second attacks is this: That the susceptibility to a second attack is greatest within the first year, is less in the second, and diminishes up to the fifth year, but a second attack may occur at any time. He had a patient who had had three distinct attacks during her life. She is thirty-four years of age, and he thought the diagnosis in each attack was unimpeachable. At the Mount Sinai Hospital second attacks are met with, but the point is, in the first five years one is most susceptible to the reinfection.

Adherent Pericardium.—Dr. Morris Manges presented a case of exophthalmic goiter, which was first admitted to the Mount Sinai Hospital some seven years ago, and entered the Ophthalmic Division on account of the marked exophthalmos—that being so marked that a corneal ulcer had developed near the outer canthus of the eye, the evidence of which you see. A double

canthotomy had to be done at that time. One sees the evidence of the corneal ulcer and where the palpebral fissure has been lessened. Dr. Manges called attention to the unique pulsations in the epigastrium, the condition of the apex beat and some of the phenomena that accompany an adherent pericardium. He also has a moderate hypertrophy of both ventricles and a slight systolic murmur. There is no history pointing to an adherent pericardium, but that need not deter one from making the diagnosis, because it is not an infrequent occurrence to find an adherent pericardium, where there is no history of pericarditis. One should bear in mind that cases where pericarditis has existed may occur without subsequent evidence of pericardial adhesions. Dr. Manges remembered one case in particular, where a boy with a purulent pericarditis was operated on, and 75 ounces of pus was removed. That boy within four months afterward became a District Telegraph boy, and although this pericardium is absolutely shut off as a result, there is absolutely no clinical manifestation of the condition. In the epigastrium and in the region of the apex beat there is an interesting series of "pulsations," which are changed in association with the respiratory movements. At the end of inspiration the movements are much more marked, and at the end of expiration they are less marked, all of which changes are due to the movements of the diaphragm. Broadbent's sizes can also be demonstrated in the posterior scapular line of the ninth, tenth and eleventh spaces—with each systole there is a retraction. For this one needs a good side light, and it is to be explained in the same way as the retraction in the epigastrium is.

This patient has not the paradoxical pulse, the venous phenomena in the neck or the first rib sign. This epigastric sign is not usually described in text-books on this subject. The case in that respect is a unique one. Cases of adherent pericardium are much more common than are supposed. The X-ray examination was very useful in corroborating some of these facts.

Dr. D. H. Wiesner said that the eye symptoms mentioned, and the condition present, are interesting. It is also a very unusual case. It is very seldom that one gets an adhesion of the two lids—anchyloblepharon—as in this case, after a cantholysis. The fact of the cantholysis being necessary, of course, would indicate the extremeness of the case.

Renal Calculi; Nephrotomy and Nephrectomy.—Dr. A. Lyle presented this case. Mrs. D., Italian, thirty years of age, entered the hospital June 29, 1903. Family history negative. Present history: Two months ago gave birth to a child, and since then has had severe pain in right lumbar region—pain being transmitted forward and downward to inguinal region. Had chills, fever and night sweats. On examination temperature was 105° F., pulse 130. Palpation revealed an oval hard mass in the kidney region, while the abdominal muscles on the same side were hard and tense. Patient complained of severe pain on pressure of the right abdominal muscles, as well as on the bimanual pressure. The patient was put to bed for observation. Urinary analysis showed sp. gr. 1.010, alkaline, moderate amount of albumin, pus, blood and renal epithelium. For three days temperature ranged between 101° and 104.5° F. Diagnosis of renal calculi with pus was made. On July 2 an aspirating needle was introduced into the right kidney under cocaine anesthesia, and pus evacuated. Ether was at once given, and a lumbar incision made over the kidney. Patient's condition was critical and extreme haste was made necessary. The bleeding points were controlled by gauze packing, and the kidney was incised longitudinally through the cortex into the pelvis. Several small abscess cavities were opened and four calculi removed. The anesthetic had to be discontinued before the pelvis of the kidney was reached and free stimulation resorted to. The wound was tightly packed with plain sterile gauze and the patient returned to bed. The temperature dropped that evening to 100.5° F., and the pulse to 120. The following morning the temperature was 99° F., and the pulse 112. She rallied remarkably well from the operation, but the temperature ran high, varying between 99° F. and 102° F., or at times 104° F. Nephrectomy was advised, but persistently refused, until patient was in almost a moribund condition. On August 6, with temperature 102.8° F., pulse 120, the patient was again put under ether, but before anesthesia was complete the heart fagged and the anesthetic was discontinued—a hurried dissection of the kidney with the finger was made until all adhesions were freed. The patient being in a moribund condition, no dissection of the vessels was made, but two large pedicle clamps were made to grasp the vessels and ureter. The kidney was removed, the wound packed with gauze and the patient returned to bed, the whole procedure being completed in five minutes. Saline infusions and other free stimulation served to tide over the critical moments. The convalescence was uneventful, and the patient was discharged on August 30, 1903.

Dr. F. M. Jeffries reports on the specimen as follows: "Multiple abscesses, acute and chronic interstitial nephritis. Parenchymatous degeneration. Acute and chronic glomerular nephritis. Calcareous degeneration and numerous casts."

The Relation of Proteids to Edema in Mirantic Children, with Urinalysis in Infantile Diarrhea.—Dr. Potter A. Palmer, of East Orange, N. J., read this paper. Will be published in a subsequent issue of the Medical News.

Dr. W. L. Baner, in discussing Dr. Palmer's paper, said that one not infrequently finds infants with severe diarrhea, who have a considerable amount of edema, and the urine does not show anything, and one is in doubt about what to do. The edema certainly seems to come in some way from the inanition of the child, and it is therefore quite a problem just how to adjust the food, so as to increase nutrition without increasing the diarrhea. In Dr. Potter's cases the dropsy was invariably due to inanition—what might be called an inanition edema—but there are some cases in which there is an acute nephritis, secondary to the dysentery. He had in mind two cases, giving the agglutination test with the Shiga bacillus in which albumin, casts and blood were found in the urine. In one case the toxemia was very severe. The suppression of urine became complete in that case. The second case had a favorable termination, and the urine cleared up after the dysenteric symptoms disappeared. In regard to the question of edema being due to inanition, he remembers the case of a man who fasted forty-five days some years ago, and was much troubled toward the end of his fast with edema of the ankles and feet, so that he could hardly get on his shoes. His urine was normal. No blood examination was made in his case to see if there was hydremia, but there seemed to be some distinct connection between the inanition and the edema.

Dr. A. Lyle said, in reply to Dr. Reilly, that there was no examination made of the other kidney. He felt satisfied from the patient's general condition and the condition he found this kidney in when doing the nephrotomy, that there was no function being performed by this kidney, and the temperature that the patient ran afterward being so septic, it was decided to

remove it. With regard to the length of time the clamps were left on, he left them on for forty-eight hours. He had no idea how long they should be left on.

Dr. R. Guiteras congratulated Dr. Lyle on removing the kidney in five minutes on the second operation, because in a great many of these cases of calculous nephritis there is so much sclerosis of the kidney and so many adhesions that it is almost impossible to remove it in any time. The upper leaflets of the perirenal fascia in such cases are principally involved, and the adhesions to the diaphragm or to the vena cava may be so firm as to render the removal of the organ impossible. Very often when a nephrotomy is performed in a case of this kind and all the stones are not removed sometimes one cuts into an abscess cavity or the pelvis of the kidney and evacuates the pus, feels no stones, but afterward if the kidney is removed one will find a stone in some part of the kidney communicating with the abscess cavity. Another interesting feature in this case was the leaving on of the clamps. In two cases Dr. Guiteras has left them on after nephrectomy. The first time for four days. He presented that case before the Genito-Urinary Society. There were a number of general surgeons present, who discussed the case, and no one had had the experience before of leaving on clamps, and could not state just how long they should be left on. In the other case he left them on for four days, but in reading over the literature of the subject afterward he found that a French surgeon had left clamps on only forty-eight hours, while another one left them on but twenty-four hours, and there had been no hemorrhage following their removal.

Dr. J. R. Goffe said the case seems to speak for itself. Cases of a similar pathological condition are, of course, not uncommon, but the dexterity and rapidity with which the operation was performed is rather unique. During the last year at the Polyclinic he had a case of stone in the kidney that had been diagnosed as an ovarian tumor. There was a large tumor that reached from the site of the kidney into the pelvis and was fluctuating, but he was able to differentiate by careful examination between the pelvic organs and this tumor, and following it up, he made up his mind it was a kidney. After making a posterior lumbar incision he evacuated an immense quantity of pus from the kidney, and found a large stone in the pelvis of the kidney blocking the mouth of the ureter. The woman was not in such a precarious condition as the patient spoken of to-night. A nephrotomy was done at the time. After evacuating the pus (it was a multilocular affair), the kidney was dissected out and removed. The patient recovered. She had been treated for malaria for a year. She had had periodical attacks of chills and high temperature, and at an interval of some weeks, sometimes a month, she would have a comparatively normal temperature, and be up and about—then she would have a repetition of the attack. Finally she fell into the hands of another man who made a diagnosis of an ovarian cyst and sent her for operation.

Dr. E. M. Sill has examined the urine of quite a number of babies with edema, and was unable to find albumin in any urine examined, except in those with very high fever, and in those cases he thought it was due more to the fever than any kidney inflammation.

Dr. M. Manges said the name edema, given by Dr. Baner, is a very apt one, and has its foundation in a very interesting theory as to the causation of dropsies and edema. Dr. Baner calls attention to the enormous importance of general nutrition, and especially as involving the permeable endothelium of the smaller vessels, and in giving the various etiological factors in the causation of edema and such conditions; he also lays especial stress upon the nutrition of the endothelial cells. It stands to reason that in these marasmic and underfed infants the endothelium will be much more permeable, and the name given by Dr. Baner of inanition edema might be accepted on that basis.

Dr. M. Manges presented a specimen of radium, a grain and a half in weight and described and demonstrated its action, although the case of cancer for which it had been purchased was not benefited by its use.

THE HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

Regular Monthly Meeting, held Saturday, October 24, 1903.

The President, Frank W. Daniels, M.D., in the Chair.

Appendicitis in its Diagnostic and Surgical Features.—This was the title of the paper of the evening and was read by Dr. John B. Walker, who said that every surgeon occasionally is surprised to find in cases of appendicitis where he expected that the operation would be comparatively easy that dense adhesions or other complications are present, making the operative procedures extremely difficult. It is evident in these cases that previous attacks of appendicitis have been completely latent, or have given such few symptoms as not to have attracted the patient's attention seriously, or a least not to have led him to call in a physician. These are the so-called recovered cases of appendicitis, yet it is evident that the recovery is a step toward the deterioration of tissue rather than any true improvement. These exceptional cases only serve to emphasize the difficulty of diagnosis, and of determining whether operation is necessary or not. The best authorities, like McBurney and Richardson, do not insist on operation in every case of appendicitis.

Simple Appendiceal Colic.—This affection is the simplest form of appendicitis and has for its principal symptom colicky pains. Usually there is disturbance of the pulse, but commonly no, or at most very slight, disturbance of the temperature. There is no true fever and no tumor can be felt. A few hours after the onset the pain diminishes and the patient usually goes on to satisfactory recovery. These cases are due probably to mechanical kinking of the appendix and are not truly inflammatory in character. If several such attacks occur it is evident that the appendix has become a point of less resistance and infection may follow with serious results, hence it is better to operate and remove that organ.

Suppurative Type.—In the second form of appendicitis, characterized by the development of suppuration, besides the pain there is a rise of temperature to 101° or 102° F. and of pulse to 120. The abdomen becomes rigid and tenderness over the appendix becomes marked. In these cases it is difficult to decide whether to operate or not during the attack. If suppuration should become extensive there is likely to be rupture of the appendix, followed by peritonitis with perhaps fatal termination. An important sign of advancing danger, in Dr. Walker's experience, has been the occurrence of pain when the abdomen is touched even on the other side. This extreme tenderness usually indicates that the collection of pus in the appendix has become tense and is in danger of rupturing.

Gangrenous Appendicitis.—In the third and severest form of appendicitis the preliminary symptom is usually severe pain followed by nausea and chilly feelings, often to the extent of a full chill and rigor. Sometimes there is a delusive amelioration of symptoms when gangrene sets in, during which the attending physician may

complacently consider that the patient is getting better. Most of the cases with sudden severe symptoms require early and immediate operation. It is not always easy to decide what must be done. Leucocytosis has been assumed to be of assistance in the diagnosis and the presence of a white blood cell count of 15,000 to 18,000 is usually a grave indication. Fortunately the largest number of appendicitis cases are not of this severe form but are simply catarrhal inflammations and amelioration can be looked for. In such cases the interval operation is the best and most suitable, besides being the procedure most likely to commend itself to the patient and to his friends, till they grow accustomed to the idea of operation. In some cases all signs fail and notwithstanding the fact that the classical symptoms of appendicitis appear to be present, at operation some other pathological condition is discovered. In the female, of course, ovarian disease may readily simulate appendicitis and must be constantly borne in mind. Even in true appendicitis the symptoms may vary from the classical type. At times the point of tenderness is not at McBurney's point, midway between the umbilicus and the anterior superior spine, but may be quite distant from it. In one case Dr. Walker even found it behind in the loin. A high leucocytosis is of value in helping diagnosis, but a medium leucocytosis gives no information except that any sudden increase may point to a serious progress in the pathological condition.

Premature Operations not Regretted.—As a practical conclusion it must not be forgotten that many surgeons have regretted delay in operating, but that there is no lasting regret over premature operation. For this reason then, the surgeon must be called early into the case to share the responsibility and must be ready to give the patient the benefit of the doubt by operating if there seems to be any good reason therefor. More than in any other disease, in appendicitis delay is dangerous. Even where recovery takes place the condition for future operation is always rendered a little worse. The unreasoning opposition to immediate operation in these cases is now gradually disappearing as the result of the growing conviction that early surgery is sure to be life-saving in the end and has very few objections. Dr. Walker's paper will appear in a subsequent issue of the Medical News.

Appendicitis and Pyosalpinx—Dr. Egbert Grandin said that pyosalpinx and appendicitis are symptomatically so closely related that mistakes are almost inevitable in many cases. In a recent case, he saw all the typical symptoms that are usually supposed to indicate appendicitis, the rigid rectus muscle, with knees drawn up, the pain in the right iliac region, with tenderness at McBurney's point and the general uneasiness so characteristic of intestinal trouble. As the temperature was low and only the pulse affected, the diagnosis of appendicitis seemed sure. The operation was done by an incision in the right iliac region and a normal appendix was found with right salpingitis and ovarian abscess. Six to eight ounces of pus were evacuated, yet the appendix lying in close contiguity with the abscess wall was absolutely normal.

Removal of Normal Appendix.—In cases such as those just described where the appendix is already in the operator's hands, Dr. Grandin prefers to remove the appendix, even though there are no pathological lesions in it. The removal of the appendix does not add to the danger of the operation while it is of distinct benefit to the patient in doing away with all risk of subsequent development of appendicitis. Even in cases where the operation is not on the right tube and ovary, but for some other gynecological conditions or intra-abdominal lesions quite distant from the appendix, he considers it better to remove this useless organ, which may so readily prove a source of subsequent danger requiring operation. Dr. Grandin has seen several conditions simulating appendicitis and does not always expect, even in apparently classical cases to find a diseased appendix. In one case recently he found a hernia of the ileum, through an aperture in the mesentery. Two inches of the gut had been forced through and the ileum was covered with a black fibrinoplastic exudate. A resection of the gut had to be done and afterward a careful search was made for the appendix, which was found to be perfectly normal. In a case of presumed relapsing appendicitis, in which there had been apparently several characteristic attacks, there were some anomalous symptoms, and consequently a doubt as to the pathological condition that might be found. A median incision was therefore made and the omentum was found adherent to the base and front of the bladder. This was tied off and after considerable search the appendix was found to be perfectly normal and was removed, to avoid subsequent complications.

Reflex Neuroses.—There seem to be a certain number of cases of appendicitis in which there is very little true inflammation. It is questionable whether these are neurotic in origin or whether they are of the so-called catarrhal type, a term which Dr. Grandin does not like. The main symptom of these cases is a low grade inflammation, which gives rise to so-called intestinal indigestion. At intervals the patient feels discomfort in the right iliac region, there is a sense of distention with constipation, though relief is usually afforded by a laxative. This used to be considered due to trouble around the cecum. Adhesive inflammation with narrowing of the bowel and disturbance of peristaltic motion. Such cases sometimes have a long history. Dr. Grandin has recently seen one that has run for eleven years and now has no further attacks. These are the cases that deceive physicians into thinking that they may have time to wait, though at any moment a fatal complication may be developing.

Interval Operation.—Dr. Grandin considers that it is better to operate in the interval, but there should be no waiting until tumor formation, though there seems to be an impression abroad, among general practitioners of medicine, that this should be looked for. If the patient has had one frank attack of appendicitis, there should be no question of waiting for another to decide the diagnosis, since a second attack may prove fatal. Certainly the old custom of waiting for a series of attacks, even though these are slight, is fraught with great danger for the patient and will often be a source of worry and annoyance to the attending physician and risk to the patient.

Indications for Operation.—The surgeon should not consider that the temperature is an important danger signal in appendicitis. Even though the temperature is normal, if the pulse be high the patient should be operated upon. Any sudden change, especially in the patient's sense of discomfort, should be the signal for serious consideration as to the necessity for operation. In gangrenous cases it must not be forgotten that the patient may become quite comfortable, just at the moment when operation has become absolutely necessary if life is to be saved.

Elective Appendicectomy.—Dr. Grandin believes that whenever the abdomen is opened for any other condition, the appendix should be removed whether it shows signs of disease or not. This puts the patient at once beyond all the dangers likely to accrue to him from the possession of this useless organ. It takes but a few minutes to do the operation, it adds nothing at all to the risk to anyone who understands the circumstances;

certainly any physician or surgeon himself, would prefer to have his appendix removed under such conditions, instead of leaving it to the chance of fate and future danger.

Unwise Waiting.—Dr. William B. Coley said that many a physician has learned the unwisdom of waiting to have the operation for the removal of the appendix done on his patient in the interval. No set of symptoms can be depended on to give absolute information as to the time when operation should be done. In a recent case Dr. Coley operated upon a patient with a normal pulse and temperature. In this case there had been some gastric symptoms but no local pain or tenderness, and there was only a generalized colicky pain which increased in amount. The pulse was at 73, the temperature 98.5° F. Great rigidity and pain developed over the lower part of the abdomen and this was so marked that it was considered necessary to operate, although the operation was done within twenty-four hours after the development of the first symptom, the whole pelvis was found full of pus. In a case in Brooklyn not long ago the patient developed a temperature of 103° F., which gradually subsided in the course of the two subsequent days to normal. Suddenly collapse took place and death followed, and as no autopsy was allowed, the absolute condition present could not be determined.

Danger of Waiting.—It is good principle to wait, but it is fraught with danger. Dr. Coley visits a summering place every year and finds that country practitioners wait even more than their city brethren, and as a consequence there are some gaps in the circle of acquaintances every year with the story of death from appendicitis. It is not often that a surgeon regrets having operated too soon. Physicians and surgeons both often regret having waited too long.

Differential Leucocyte Count.—Dr. George Brewer said that there has been serious disappointment because of the failure of the leucocyte count to give any definite information with regard to the development of a septic process. At one time it was thought that this would be of significant value. Very recently he has found that the differential leucocyte count seems to give important information. It is possible to have a low leucocytosis, yet a septic process be in full swing. A differential count will show in these cases according to the experience at Roosevelt Hospital, that the polynuclear leucocytes are increased much more than their due proportion. Usually the polynuclears number about 62 per cent. of all the leucocytes. When over 70 per cent. of polynuclear leucocytes are present the surgeon may look for abundant pus formation. In several recent cases in which this was true very large abscesses were found.

Failure of Leucocytosis.—Dr. Fiske said that it is evident that in appendicitis as in pneumonia leucocytosis may fail to make its appearance in certain cases. In pneumonia experience shows that the absence of leucocytosis speaks for special virulence of the disease. The same thing would seem to be true with regard to appendicitis in certain cases. To look for leucocytosis then may be worse than useless. Dr. Fiske believes that time can be saved by operating early. If the patient comes down with appendicitis and is operated on at once, he will be able to be around in three weeks, or less as a rule. If after the attack is over, ten days or two weeks are consumed in waiting until the patient is supposed to be ready for operation, altogether at least six weeks will be required before the patient can be out of bed. Early operation has no regrets.

Dr. Howard Lilienthal said that it requires much more courage to advise waiting than to counsel operation. No surgeon or physician, no matter what his experience, can tell absolutely, so treacherous is appendicitis, what will happen in the next hour in a given case. The case may be running an apparently normal course and yet the virulence of the infection may be such as to cause septic thrombosis of the mesenteric veins. If this happens then the removal of the appendix will not be followed by recovery but the patient will develop further septic conditions, liver abscess may occur and death will take place in two or three weeks. This constitutes an important argument for early operation and against not waiting.

Mount Sinai Experience.—Last year at Mt. Sinai 110 cases were operated upon for appendicitis. There were about 8 per cent. of deaths—all cases being included in the statistics, even those that were considered to be suffering from general peritonitis at the time the operation was performed and who were operated upon only to give them a possible chance for life. The older statistics gave between 20 to 25 per cent. of deaths in these same cases. Dr. Lilienthal gave some details of typical cases in which delay was made because of the influence of other consultants and in which, even when the issue was not fatal, the patient was not benefited by the delay. In a recent case the abdomen was extremely sensitive so that the patient could only be examined under an anesthetic and there were the signs of general peritonitis. Turbid fluid was found in the hypochondrium and in the pelvis. As little packing as possible was used in the case, so as to avoid injuring the peritoneum. Even the use of gauze pads in these cases almost surely does harm. A small cigarette drain was inserted down to the root of the appendix and though the case seemed hopeless the patient recovered. In such cases death was inevitable a few years ago and now many of the patients are saved. Dr. Lilienthal has found the blood count absolutely of no use and considers that when there is doubt the best thing to do is to operate.

True Appendicitis.—Dr. Lilienthal gave the details of certain peculiar symptoms occurring in his own daughter, aged nine years. She suffered from a peculiar stomachache of colicky nature, during which, however, there was no fever, no rise of pulse, no localization of symptoms and no tenderness of the abdomen. It recurred several times at long intervals and then began to recur at shorter intervals. It was causing so much discomfort that operation was decided upon, and as a sensitive point in the right iliac region could be found on deep palpation, the incision was made as for an ordinary appendicitis operation. Much to Dr. Lilienthal's surprise two fecal concretions were found in the appendix and with them some grape-seeds. The mother of the child had always insisted that it must not swallow grape-seeds. The Doctor himself, doubting that grape-seeds had ever caused any appendicitis, had rather winked at the idea of such a stern prohibition and now realizes better the good advice it was.

Appendicitis and Diagnosis of Peritonitis.—Dr. Frank Daniels said that appendicitis itself is not diagnosed until it causes an accompanying peritonitis. The true diagnosis of appendicitis cannot be made because, while that organ itself is alone affected, it does not give sufficiently pathognomonic symptoms. In a recent case under Dr. Daniel's care he had a somewhat similar experience to that of Dr. Lilienthal. The patient suffered from attacks of colicky pain, but without any definite localization and without any rise of temperature or increase in the frequency of the pulse. He has become convinced himself that such mild, obscure cases of appendicitis, are much more frequent than has been thought and constitute preliminary symptoms usually so little attended to by patients that they tell their physicians nothing of them when more serious conditions develop. It is sometimes the custom to speak of these as functional or neurotic, but they are probably organic.

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